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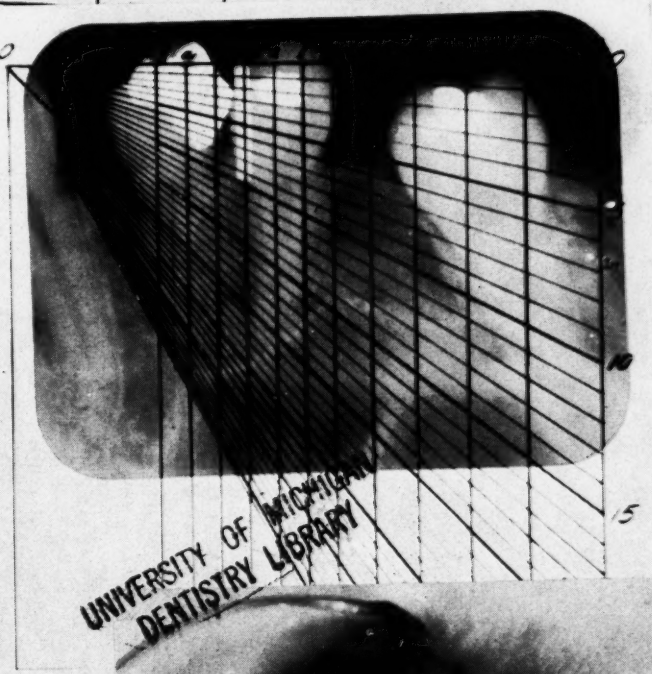

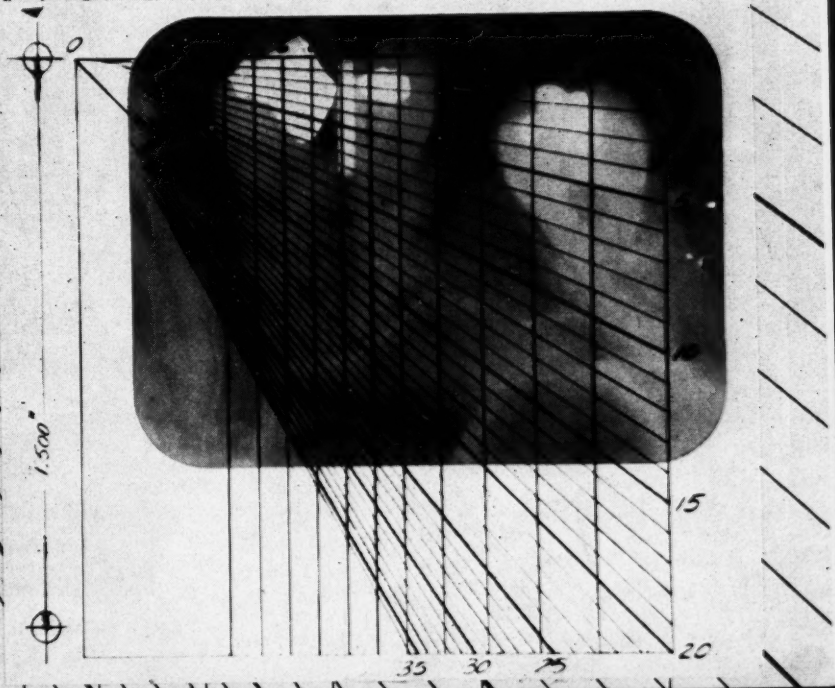

October 1960

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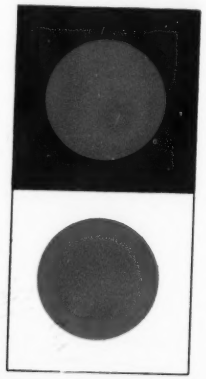
COLOR . . . plays tricks

in selecting anteriors for your next full or partial denture... consider the influence of environment on color



★ ★ ★ ★ ★ ★ the size and color of the red discs within the black and white squares are identical although they *appear* to differ in both size *and* color . . . this is an optical illusion created by environment.

Tooth colors are subject to these same influences of light and environment—making the Dual-Dial Color System specially interesting and helpful in the quest for "living" esthetics.

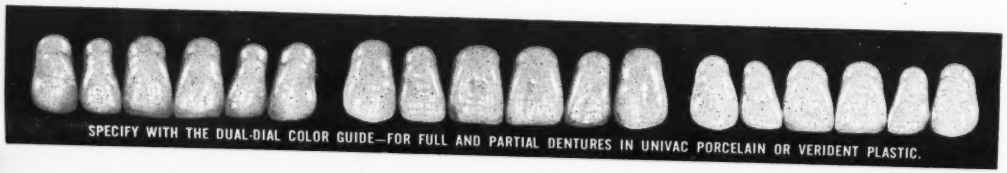
In full and partial denture prosthetics, too, color can play tricks. It is therefore not sufficient merely to match tooth colors . . . it is *even more* essential to select tooth colors having *ability-to-blend* . . . and thus to "come alive" in the oral environment. This is the phenomenal color characteristic that distinguishes Univac Porcelain and Verident Plastic above all other anteriors—assuring a *natural beauty*—so gratifying to the patient.

Univac and Verident tooth materials and their pigmentation were developed with special optical properties. Refraction and absorption of light approximate those of living teeth. Univac Porcelain and Verident Plastic colors are completely free of the lifeless, greenish cast found in other color systems. Further, the methods used in incorporating these specially selected, pigmented materials in the tooth mold, enable you to grind, and if necessary, even to re-shape the tooth—*without altering original tooth color!*

Natural tooth colors are almost infinite in number. In every dentition there are variations between centrals, laterals and cuspids. This recognized fact demonstrates the esthetic importance of "blending ability", . . . *an inherent characteristic of UNIVAC Porcelain and Verident Plastic Anteriors.* Also, the different colors of the UNIVAC Porcelain and Verident Plastic Dual-Dial Color Guide *harmonize with each other,* allowing full freedom to reproduce natural variations of color in the same denture.

Dual-Dial colors are incredibly "alive", complementary and consistent . . . close up, as well as across the table . . . without a trace of greenish cast, indoors and outdoors under all normal lighting conditions. You'll prove this in every case as UNIVAC Porcelain and Verident Plastic teeth blend within the oral environment. You see only the smile—not the teeth. The patient is gratified . . .

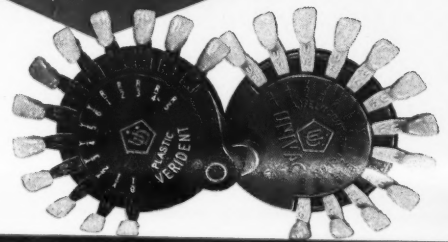
Correct color and "blendability" . . . Key successful esthetics . . . *they are the Dual-Dial Color System* . . . the basis for the great, growing acceptance of Dual-Dial Color, for UNIVAC Porcelain and Verident Plastic.



DUAL-DIAL TOOTH COLORS PRESENT AN "ALIVE" APPEARANCE AND BLEND UNDER ALL NORMAL LIGHT AND ENVIRONMENTAL CONDITIONS . . .

UNIVAC
PORCELAIN ANTERIORS

VERIDENT
PLASTIC ANTERIORS



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OCTOBER 1960

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About Our CONTRIBUTORS

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Marvin Kozlov, B.S., D.D.S. 1954, M.S. (University of Illinois, College of Dentistry, 1959) is engaged in the practice of pedodontics and for the last three years has been teaching and conducting research in this field at the University of Illinois. In collaboration with Maury Massler, D.D.S., M.S., Doctor Kozlov makes his first appearance in DIGEST, presenting The Present Status of Tranquilizing Medication in Children's Dentistry.

John R. Trott, B.D.S. (University of Adelaide, South Australia, 1950) who is Associate Professor of Periodontology, Faculty of Dentistry, University of Manitoba has engaged in a variety of activities during his professional career: he has been in personal practice, has been a member of the staff of two London hospitals, has taught undergraduate and postgraduate students, and in 1959-60 established the Department of Oral Pathology at the University of Manitoba.

Nathan Allan Shore, D.D.S. (Marquette University Dental School, 1939) specializes in the treatment of temporomandibular joint dysfunction and rehabilitation. Doctor Shore is an experienced writer on dental subjects and in this issue concludes his two-part article, Temporomandibular Joint Dysfunction and Pathologic Occlusion.

S. L. Drummond-Jackson, L.D.S. (Royal College of Surgeons, Edinburgh, 1931) is in private practice in London where he specializes in intravenous anesthesia techniques. Doctor Drummond-Jackson has published articles and a book, "Intravenous Anesthesia in Dentistry," published by Staples Press; he has produced a number of films on dental subjects. This month DIGEST presents an adaptation of Doctor Drummond-Jackson's article Post-extraction Neuroma: A Cause of Trigeminal Neuralgia, which first appeared in the December 1959 issue of *British Journal of Clinical Practice.*

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WANDA T. PICKARD, B.A., Assistant Editor
708 Church Street, Evanston, Illinois

A New Method of TOOTH LENGTH DETERMINATION *for Endodontic Practice**

E. JAMES BEST, D.D.S., WILLIAM GERVASIO, D.D.S., JOHN T. SOWLE, D.D.S., SHEP WINTER, B.M.E., M.S., and B. FRANKLIN GURNEY, B.S., M.S., Chicago

DIGEST

This article describes a new procedure for determining the exact length of the tooth from the incisal or occlusal surface to the root apex as desired for endodontic practice. The procedure employs the B-W Measurement Scale, a device that has been evolved for this specific use and that has been demonstrated by experimental and clinical tests to be of definite value as an operative adjunct.

Importance of Precise Measurements

Ascertaining the exact length of the tooth from the incisal or occlusal surface to the root apex is of the utmost importance in endodontic practice. The purpose of this measurement is three-fold:

1. Complete and thorough biomechanical cleansing of the root canal is facilitated.

2. A more precise placement of the anti-infective dressing is effected.

3. Maximum accuracy in filling the root canal is possible.

Disadvantages of Inaccurate Measurement—(1) Additional appointments and postoperative pain for the patient may result.

(2) In the mechanical cleansing of the canal, if reamers and files are used infra-apically, remnants of tissue may remain which can be a permanent foci for micro-organisms.

(3) If this operation is performed supra-apically, resultant periodontitis may afford the patient postoperative discomfort.

(4) The same condition will prevail if the impregnated or moistened paper point extends through the apical foramen.

(5) In the filling of the root canal it is of paramount importance to have an exact measurement of the tooth. Underfilling and overfilling many times result from inaccuracies in this computation.

Conventional Method—The accepted method of making this calculation includes the following steps: (1) an instrument is inserted into the root canal, (2) a stopping device is adjusted to approximate the incisal or occlusal surface, and (3) a radiograph is procured.

Equation may be Utilized—After development of the x-ray the following formula may be utilized:

ALI - ALT = RLI : RLT

Equation Explained—ALI = actual length of the instrument.

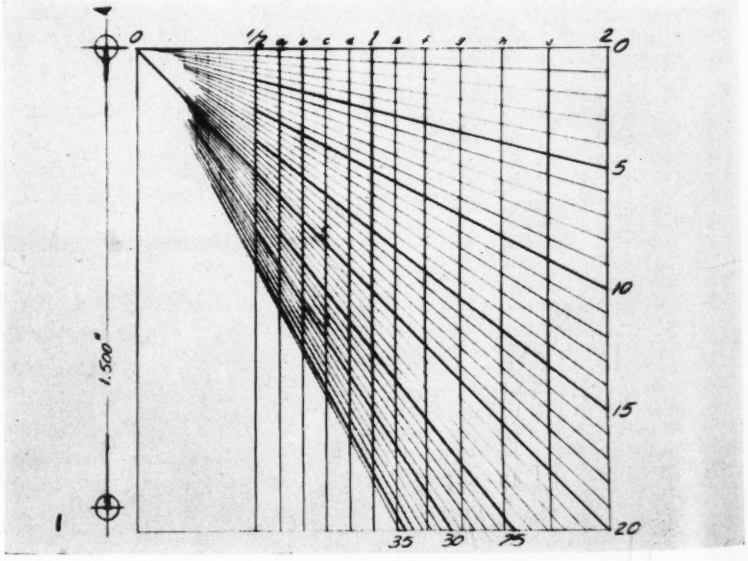
ALT = actual length of the tooth.

RLI = radiographic image length of the instrument.

RLT = radiographic image length of the tooth.

Application of Equation—Equation is a mathematical proportion. The solution is therefore obtained by multiplying the extreme factors (ALI X RLT) and the mean factors (ALT X RLI). The mean total is divided by the extreme total. The answer is the correct length of the tooth.

*From Departments of Endodontics and Research, Loyola University School of Dentistry, Chicago. Mr. Winter is a consulting engineer.



1.
B-W Measurement Scale.

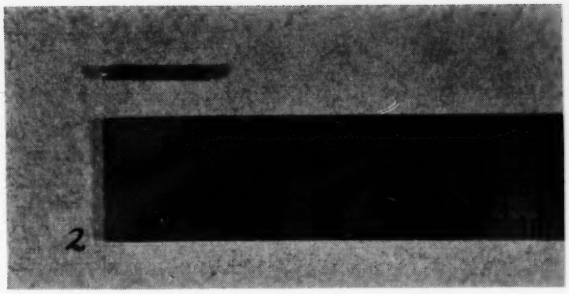
Disadvantages of Method—Although the method of tooth length determination described is accurate it presents definite disadvantages:

1. Placement of the film pack with the rubber dam in place is sometimes difficult and uncomfortable to the patient.

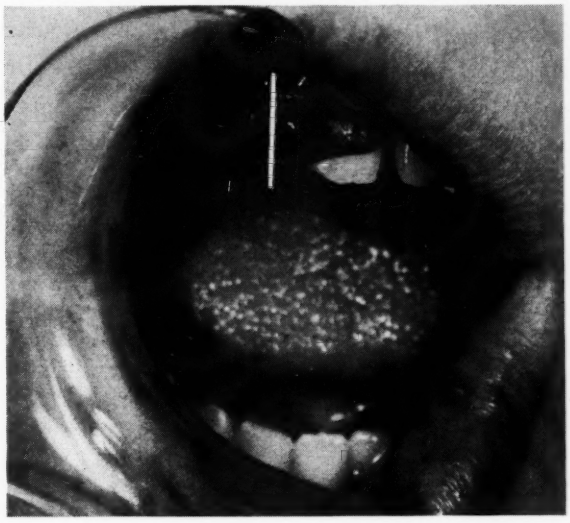
2. An error may result in the aiming of the x-ray cone since the rubber dam and clamp may obscure and cover the tooth.

3. In cases of elongation the complete instrument cannot be seen on the radiograph and therefore the formula is of no value.

4. Obtaining an x-ray during the same appointment delays the endodontic operation and is time consuming.



2.
10-millimeter pin.



3.
Pin in place prior to taking the radiograph.

New Procedure Devised

Because of the disadvantages inherent in this commonly accepted method a new method has been devised for obtaining this diagnostic measurement prior to beginning endodontic therapy.

Description of Scale—The B-W Measurement Scale is shown in Figure 1 and is designed to compensate for radiographic elongation and foreshortening:

1. The number "I" on the horizontal scale would correspond to a radiographic image without distortion.

2. All numbers and letters to the left of this digit would indicate foreshortening while numbers and letters to the right would be indicative of elongation.

3. The numbers on the vertical line are millimeter graduations.

Used with this device are 10-millimeter stainless steel pins shown in Figure 2.

Pin Placed Parallel to Tooth—It is the accepted practice that before initiating endodontic treatment a radiograph is taken for diagnostic purposes. Prior to the insertion of the film pack a 10-millimeter pin is selected and placed in a plane parallel to the tooth chosen for treatment. This pin is held in place with soft wax, and may be attached anywhere in the area that will be included in the x-ray (Fig. 3).

Radiographic Image Shown—Figure 4 illustrates the image that is seen on the processed radiograph.

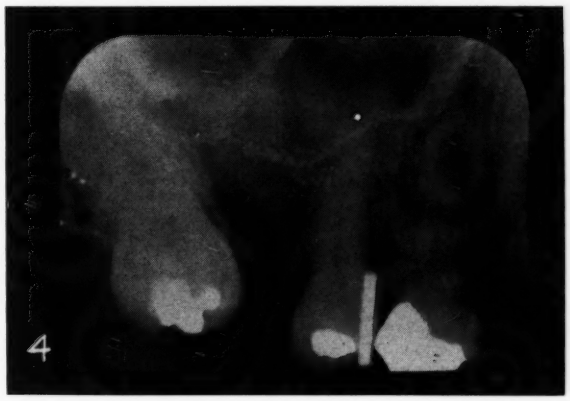
Measurement Determined—The radiograph should be completely dried before any calculations are made. The method by which this measurement is made is accomplished in the following manner (Figs. 5, 6, and 7):

1. Place the x-ray behind the B-W Measurement Scale and aline the pin image between the (0) and (10) millimeter graduations.

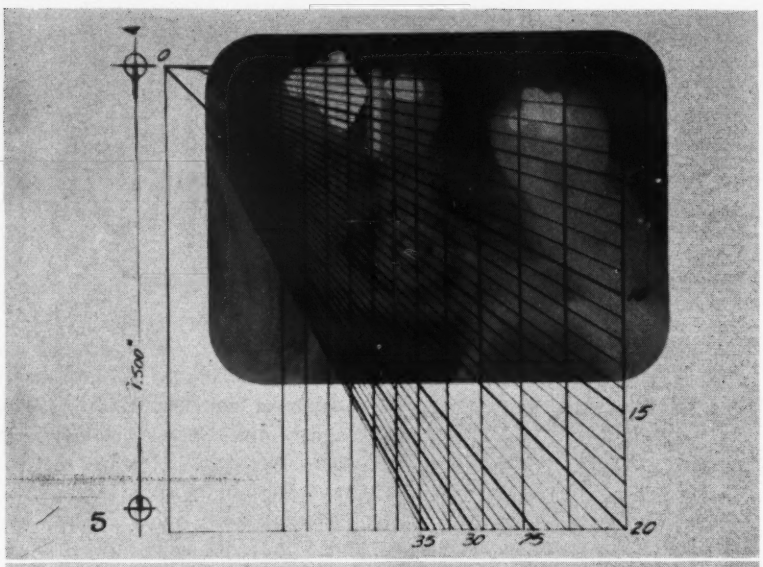
2. Move the radiograph back and forth in a horizontal plane until the pin image falls exactly between the graduations.

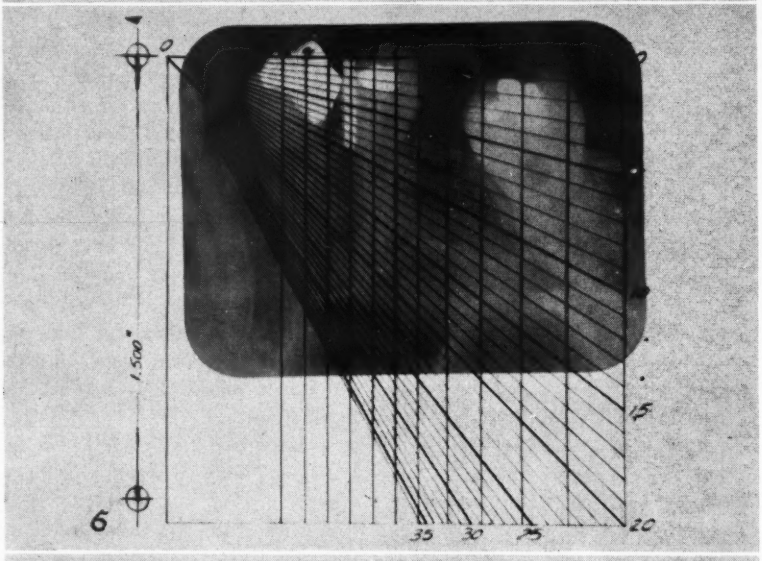
3. Note the letter or number on the horizontal scale in which the image rests.

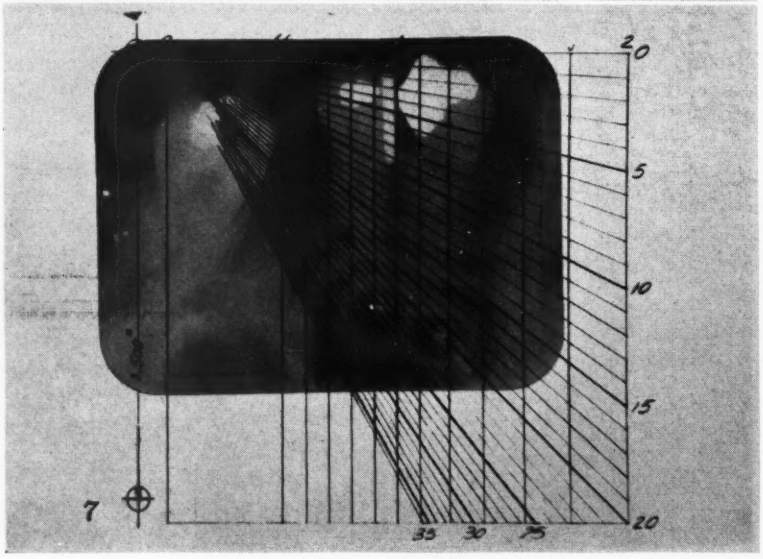
4. Reposition the radiograph so that the incisal or occlusal surface edge meets the O horizontal line. The horizontal line that crosses the root apex is the measurement of the tooth in millimeters.



4.
Radiograph of the pin in place.







In cases of the multirooted teeth the length is estimated for each root individually.

Development of Scale

In order to calculate the degree of accuracy of this scale a two-fold method of experimentation was devised.

First Method—(1) Fifty extracted teeth were embedded in blocks of a mixture of artificial stone and sawdust.

(2) A number was written on each sample to correspond to an entry on the record sheet.

(3) A measurement pin was attached to the coronal portion of the tooth and a radiograph obtained.

Intentional Distortion: In this phase of the experiment intentional radiographic distortion was effected by aiming the cone at extreme angles. This precaution was taken since an exact image of embedded teeth will be reproduced with perpendicular cone placement.

Tooth Length Determined: After all the films were processed length determinations were made using the B-W Measurement Scale. As stated, fifty samples were used with two of the authors calculating the tooth length of each specimen (Figs. 8, 9, 10, and 11).

Teeth Remeasured: In the next phase of the study each tooth was removed from the stone block and remeasured by each investigator using a Boley gauge.

Second Method of Testing—This involved clinical cases and included the following steps:

(1) An x-ray with a measurement pin in place was taken of each patient cooperating in the study.

(2) The length of the tooth was as-

5.
Radiograph behind B-W Measurement Scale.

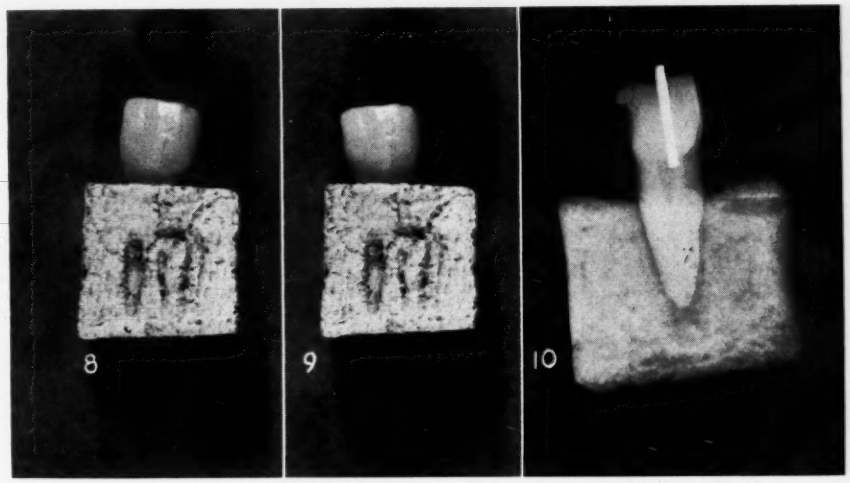
6.
Pin image positioned exactly between 0 and 10 graduations (pin image is located in C line).

7.
Occlusal tip placed at top of C line. Root apex is located at 24.5-millimeter mark (white image is small pin-hole used to facilitate locating this point).

8.
Tooth embedded in stone-sawdust block.

9.
Pin placed on experimental block.

10.
Radiograph of experimental block.



certained with the B-W Measurement Scale and recorded.

(3) After treatment was in progress a file was inserted into the root canal to a depth calculated from the previous measurement.

(4) A radiograph was made and the accuracy of the placement was determined by visual examination (Figs. 12, 13, 14, and 15).

Discussion

Any new technique or instrument in dentistry must be evaluated on the basis of accuracy, safety, efficiency, and utility. In the tabulation of the results of the first phase of this experiment, the following data are recorded:

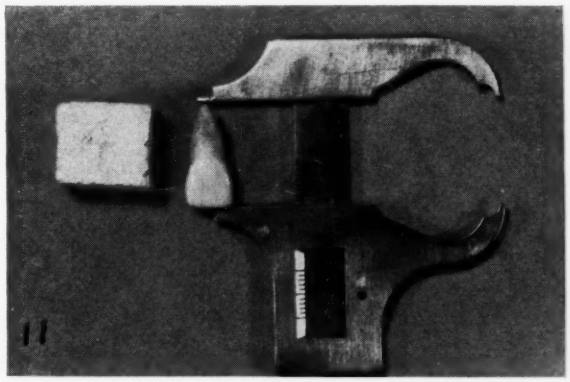
Investigator	Accuracy
X	94.2
Y	96.9

Slight Error Demonstrated—Considering that the control in this part of the study was the actual measurement of the tooth with a Boley gauge, these results were considered as reliable as measurements obtained using the original method and formula. Expressed in millimeters, the results demonstrate negligible error. It was also significant that in the second phase of this experiment (where visual observations were made in the clinical cases) the following results were obtained from twenty-five patients:

Investigator	Accuracy
R	99.1
S	99.3

Accuracy Notable—Since in actual endodontic practice visual observation is made in determining tooth length, the above results demonstrate the extreme accuracy of the B-W Measurement Gauge.

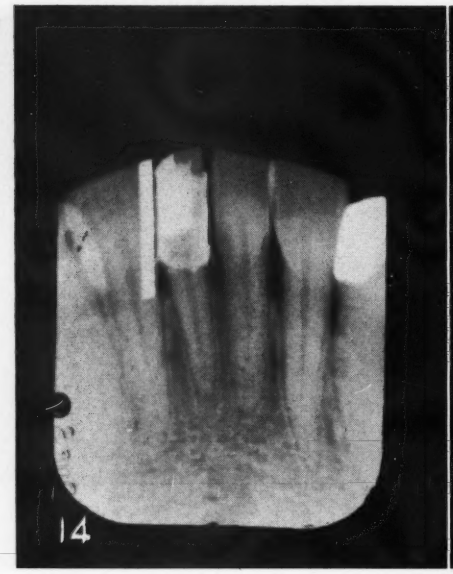
Contrast Desirable in Radiographs—It was observed that a radiograph

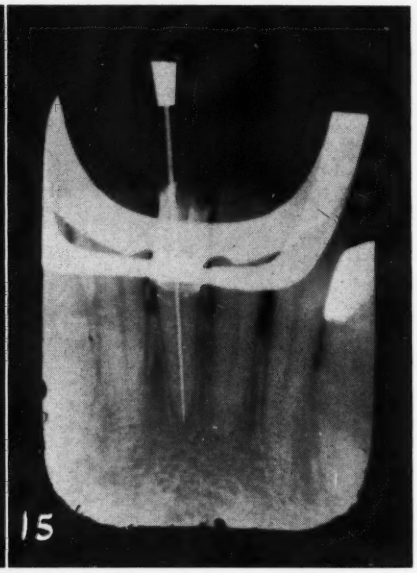


11.
Tooth removed from block and measured with Boley Gauge.

12.
Pin attached to clinical case.

13.
File inserted into root canal to depth previously calculated from measurement with B-W Gauge.





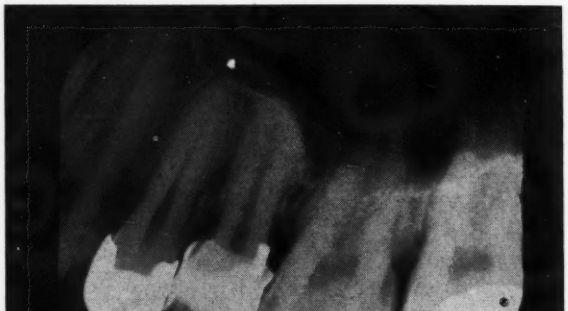
14.
Pin attached to clinical case.

15.
File inserted into root canal to depth previously calculated from measurement with B-W Gauge.

with the maximum of contrast was most useful with the B-W Measurement Gauge. Films that were light or underdeveloped when placed behind the gauge for measurement occasionally presented a problem for accurate location of the root apex. If an underdeveloped x-ray is used, however, calculations can be simplified if a small pinhole is made at the root end or the incisal or occlusal edge (Fig. 16).

Additional Uses for Device—In addition to its value as an adjunct in endodontic practice this device can also be used in the following dental procedures:

1. In cases of a previously treated tooth to determine the length of the root if in rehabilitation a post is to be inserted into the root canal.



16.
Radiograph showing pin-hole placed at root apex to facilitate locating this point when using B-W Measurement Gauge.

2. In cases of retained roots to determine the length of the fragment prior to surgical removal.

3. In cases for orthodontic treatment to determine the length of teeth prior to the application of appliances and retainers.

Loyola University, School of Dentistry

An Invitation to Contributors:

Since 1894 when DENTAL DIGEST was founded the pages of this journal have been open to articles contributed by dentists throughout the world, The emphasis has been, and will continue to be, on the publication of articles on all phases of clinical practice.

DENTAL DIGEST encourages the use of many illustrations to show techniques. We prefer that the text be short and that step-by-step technical procedures be presented as an illustrated "clinic on paper."

A booklet, *Suggestions to Authors,* has been prepared by the editorial staff and will be sent free on request.

Why publish? Any dentist who has developed a technique, refined a procedure, or has made a significant clinical observation has the opportunity to record these advancements and elevate his professional standing by making a contribution to the literature.

* * *

For all illustrated articles that appear in DENTAL DIGEST the author will receive an honorarium of $50 to help defray his expense in preparing the photography or drawings.

Contributors are invited to send their articles to:

Edward J. Ryan, D.D.S.
Editor, DENTAL DIGEST
708 Church Street
Evanston, Illinois

The Present Status of TRANQUILIZING MEDICATION *in Children's Dentistry*[*]

MARVIN KOZLOV, D.D.S., M.S., Chicago

DIGEST

The child who comes to the dental office enters a fear-producing and anxiety-provoking situation. If he cannot cope adequately with this situation he shows anxiety, or symptoms of belligerancy. There are several methods of helping the child to overcome his problem. Primary among these is promoting a good child-dentist relationship. This relationship can be secured by employing sincere friendliness to attain cooperation from the child in completing the measures required for the rehabilitation of his mouth. This approach will be successful in 90 per cent of the cases in which it is attempted and is the method of choice.

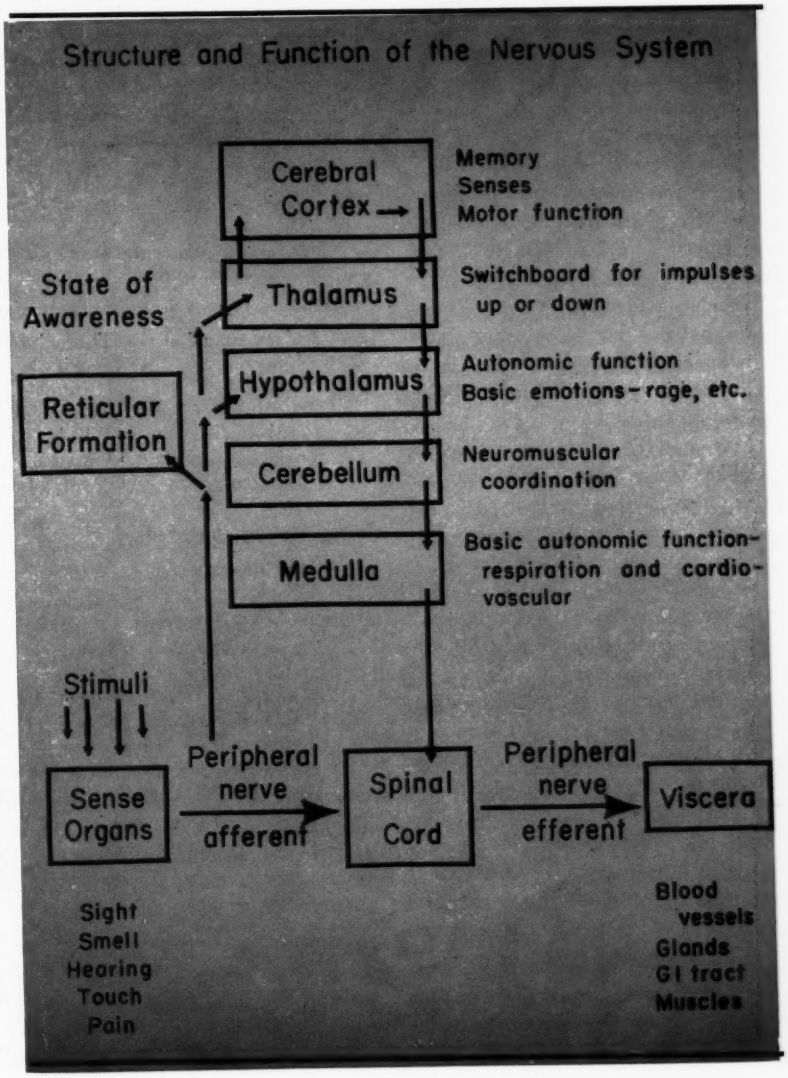
The other 10 per cent are children with special problems who fall into several categories: (1) they may be normal children with excessive fears because of previous unhappy experiences in a dental office, or (2) they may be emotionally disturbed children either primary, or secondary to some physical handicap. In all disturbed children the aim is to remove anxieties about dental care using the educational approach alone. When this is not successful, drugs must be relied upon for help.

Mechanism of Drug Action

Sedative drugs have been used for a long time. Chemically there are several types of sedatives but the barbiturates are best known and understood.

Depression of Central Nervous System—The action of sedative drugs is that of depressing the central nervous system. It is hoped that the parts of the brain involved in fear mechanisms are also depressed, thereby relaxing the patient. Unfortunately most drugs that depress the central nervous system do so non-selectively.

Other Functions also Depressed—The patient cannot remain attentive



[*]From the Department of Pedodontics, University of Illinois, College of Dentistry.

because his other senses have also been dulled and he cannot cooperate actively in dental procedures. Even neuromuscular functions may be inhibited.

Objectives of Premedication—For good dental procedures and learning to adjust to the dental situation, the objectives of premedication should be to relax the patient and to remove his anxieties, but at the same time to maintain him in an alert, attentive, and physically co-operative state. It is for this purpose that synthetic tranquilizers have been developed and investigated.

Clinical Characteristics — Within the last decade, Chlorpromazine, a tranquilizer of great potency was developed. Originally used as an antihistamine it was found to have sedative properties which differed from most sedatives. It had the property of removing fears and of insulating a patient against them. In general this is the clinical characteristic of most tranquilizers.

Many Agents Available—Chlorpromazine, was however, only the beginning. The pharmaceutical houses have developed a myriad of agents, each purporting to do better than the next. Pharmacologically, these may be antihistamines, muscle relaxants, antispamodics, and many other types. They fall into different chemical classifications as well.[1]

Specific Action of Tranquilizers—Unlike the barbiturates and other hypnotic drugs whose actions are less selective and therefore depress the entire central nervous system, the tranquilizers act more specifically. Only certain areas of the central nervous system are affected when therapeutic doses are given.

Wide Choice of Drugs Available—Numerous tranquilizers on the market offer a choice of drugs for a particular purpose. If the management problems of pedodontics are divided into three types and a suitable drug is assigned to each of these, a working rationale is obtained. Some of the conditions which may be encountered and the suggested remedies are described.

[1]Berger, F. M.: The Chemistry and Mode of Action of Tranquilizing Drugs, Ann. N.Y. Acad. Sci. **67**:685 (May 9) 1957.

Mild Anxiety

The mildly anxious child can be given a mild tranquilizer such as hydroxyzine. Hydroxyzine has a gentle, smooth effect and is in an elixir form that is quite palatable. The onset of action of this drug is one hour and the effect lasts for four to six hours.

Reactions—Side effects are minimal. Occasionally a mild drowsiness ensues.

Dosage—One dose should be given at bedtime the night before the dental appointment to enhance the effect of the required dose given just prior to the dental appointment.

Severe Anxiety

The child with severe anxiety (including hysteria) should be given a more potent drug. The phenothiazine chemical family contains several members among which chlorpromazine, promethazine, and sparine are well known. Chlorpromazine is one of the most potent of these agents.

Dosage—It should be given orally at bedtime the evening before and one hour prior to the appointment.

Reactions—In the recommended dosage, side-effects are rare and minor. There may be a slight feeling of light-headedness and a slight drop in blood pressure. Chlorpromazine is also available in liquid form. Its site of action in the brain is probably the hypothalamus.[2]

Neuromuscular Disorders

The child with neuromuscular disorders, such as cerebral palsy or polio, needs further relaxation. He may or may not need a tranquilizer for anxiety but he needs something to relax his muscles so that he can open his mouth and cooperate with the dentist.

Tranquilizer and Muscle Relaxant

[2]Alexander, L.: Differential Effects of the New "Psychotropic" Drugs, Ann. N.Y. Acad. Sci. **67**:758 (May 9) 1957.

Classification and Dosage of Tranquilizing Drugs for Children*

Chemical and Trade Names		Daily Dosage in Child 5-12*
Compounds derived from phenothiazine:		
Chlorpromazine	(Thorazine)	30-150 mg.
Promazine	(Sparine)	50-200 mg.
Mepazine	(Pacatal)	25-150 mg.
Prochlorperazine	(Compazine)	15-30 mg.
Perphenazine	(Trilafon)	6-8 mg.
Triflupromazine	(Vesprin)	20-100 mg.
Promethazine	(Phenergan)	18-75-100 mg.
Reserpine and related alkaloids:		
Reserpine	(Serpasil)	1-5 mg.
Compounds derived from diphenylmethane:		
Azacyclonol	(Frenquel)	30-100 mg.
Hydroxyzine	(Atarax)	30-150 mg.
Benactyzine	(Suavetil)	**
Diphenylhydramine	(Benadryl)	30-150 mg.
Captodiamine	(Suvren)	100-250 mg.
Compounds derived from propanediols:		
Mephenesin	(Tolserol)	1000-4500 mg.
Meprobamate	(Equanil, Miltown)	600-1600 mg.

**Dosage may be altered for the younger child. The older child requires adult dosage. Dosage must be adjusted to the individual case. Often far larger doses than indicated can be utilized.*

***No reports on children available at time of writing.*

****From Freedman, 1958.*

—Meprobamate is an agent that is both a tranquilizer of the mind and a muscle relaxant. It acts on the polysynaptic pathways of the central nervous system[3] to relax the involuntary movements and to aid the coordination of the voluntary movements of the palsied.[4] Its site of action in the brain is primarily the thalamus.[1]

Reactions—This drug has few side effects, the most prominent of which is a slight tendency toward drowsiness.

Side Effects

Most of the serious side effects mentioned in the literature are the result of long-term administration of these agents in high dosages. Since the dentist uses these drugs for a few doses over short periods he should expect few side effects.

Dosage Level

Adequate dosage levels are important to obtain desired results. Children require higher than standard dosages for effective sedation or tranquilization. Most dosages are based on the weight of the patient. The child, however, has a higher metabolic rate than the adult and therefore requires higher dosages. Dosages for children vary greatly in different subjects. It is, therefore, necessary to experiment after the initial dose reveals the individual reaction at that level.

Degree of Drug Effect

The patient may state that he feels better or more relaxed, but more often his condition must be discerned by the dentist because the child may be unable or unwilling to speak freely. Clinicians are not in agreement as to the best method of evaluating drug effects. More accurate methods of testing are generally desired. Until more adequate means are developed the clinician must continue to observe his patient and trust his judgment as to the presence or absence of relaxation. Fifty to 80 per cent success may be expected using the same per pound dosage level. Part of the failure is due to the lack of the correct dosage for the particular child.

Summary

Tranquilizers are drugs which come from many different chemical groups. They depress the central nervous system with few side-effects. Their main function is the relaxation of the mind while awareness is maintained. If used judiciously they can be helpful in dental practice especially for children who are unable to respond to patient education programs. They are especially helpful in the management of children with acute anxiety states or hysteria and in brain-damaged children.

808 *South Wood Street*

[3]Freedman, A. M.: Drug Therapy in Behavior Disorders, Pediat. Clin. North America **5**:573 (Aug.) 1958.
[4]Gilette, H. E.: The Effect of Meprobamate on Cerebral Palsy, Ann. N.Y. Acad. Sci. **67**:859 (May 9) 1957.

The Significance of Extreme Mandibular Movements

R. G. EVERY, B.D.S., N.Z., D.D.S.

Teeth as Weapons

Most mammals sharpen their teeth. This ensures that the teeth are effective tools and weapons. In the civilized human being, the instinctive motion producing sharpening by attrition has become culturally unacceptable, and therefore it is repressed soon after birth.

Primitive Response to Stress—The primitive hominid, particularly in the pretool era, would have immediately extruded his mandible laterally when in the appropriate stress situation. The movement would have been combined with display of his main weapon—his teeth—as a snarl.

Movements Repressed—Although this instinctive act in civilized *Homo sapiens* has been apparently eliminated, it nevertheless occurs during sleep. It has therefore been merely repressed. Mandibular movements achieve the sharpening, seemingly a deep physiologic need, despite any inhibition which may have been imposed upon overt conscious acceptance.

Usefulness of Activity Exceeded

Such activity during sleep, not being limited by pain may exceed the useful range of sharpening. Intense muscular activity, easily confused with stretching and yawning, extrudes the mandible until the soft tissues adjacent principally to the coronoid process are contused. This contusion occurs with intense acuteness when the mandible is laterally extruded into unilateral dislocation of the temporomandibular joint. It seems, however, that this position may not be achieved as a result of lateral extrusion only, but from first opening widely until there is bilateral dislocation.

Normal Physiologic Function—In certain circumstances the violent double resolution which follows, combined with intense lateral extrusion, redislocates one condyle in a forward position as the teeth come in contact. Contrary to popular belief, dislocation of the temporomandibular joint by opening is a normal physiologic function.

Movement Designed for Penetration of Material—The sudden resolution which follows is designed to achieve rapid acceleration of the mandible, effecting a hammer-like blow of the sharpened chisel teeth, which are to penetrate a material that has already separated the jaws. The term "dislocation" as applied to the temporomandibular joint needs definition, as it is known that most people can produce some degree of this movement voluntarily.

True Dislocations Approached—During sleep, however, without material separating the jaws, this sudden resolution toward a lateral position, when continued produces a complete overlapping of posterior teeth, and

(Continued on page 490)

GINGIVECTOMY

with the Blake Knife

J. R. TROTT, B.D.S., Winnipeg, Canada*

DIGEST

Gingivectomy is probably the least complicated surgical procedure practiced by dentists. Most practitioners, however, refer cases that require gingivectomy elsewhere and do not perform this service themselves. One reason may be that periodontists have surrounded gingivectomy with a certain amount of mysticism and have insisted that a complicated set of instruments as well as extra skill is necessary for this procedure. Gingivectomy may be performed by many means, but the method most widely used employs specially designed surgical knives. This article describes a step-by-step technique for a gingivectomy completed with a removable blade knife.

Fixed Blade Knife

The many types of gingivectomy knives may be broadly divided into two groups, (1) those with fixed cutting blades, and (2) those with removable blades. The fixed blade knife presents problems:

1. For operating convenience a multiple choice of instruments is required, and each knife has the cutting blade mounted at a different angle.

2. Each knife can only be used in a limited area so that during the operation of gingivectomy it is necessary to change instruments several times.

3. It is not until proficiency is attained that it is possible to pick up the correct instrument with each change. Time is wasted with frustration to both patient and operator.

4. Instruments blunted during the operation and resharpened cannot be re-used until they have been sterilized.

5. Sharpening these instruments is extremely difficult and many practitioners prefer to send their knives out to be sharpened. Poor sharpening produces excessive wear, dull blades, and difficult surgery.

The Removable Blade Knife

Few of the problems encountered with the fixed blade knife have to be dealt with in using the removable blade knife which has distinct advantages: (1) Fewer instruments are required, and (2) dull blades can easily be replaced when required by sharp new blades previously sterilized. These two advantages reduce operating time and simplify the gingivectomy procedure.

A removable blade type of knife widely used in the United Kingdom is the Blake knife. Because of its simplicity this knife is used not only by periodontists but also by general practitioners.

The Blake Knife

The Blake knife[1] consists of a handle, a curved shaft, 4 centimeters long, set at an angle of 22 degrees, and a head at the end of the shaft, that projects 1.5 centimeters from the line of the handle (Fig. 1). The head (6 millimeters by 6 millimeters) is slotted to hold standard Bard-Parker blades and is tapped to take an Allen grub screw which is tightened with the hexagonal Allen key to fix the blade (Fig. 2).

Standard Blades Used—A standard Bard-Parker blade No. 11 or 15, approximately 35 millimeters long, is used. The blade is inserted through the slot until the cutting edge projects approximately 6 to 9 millimeters (Fig. 3). With 6 millimeters of the blade body held in the head, the blade tail, approximately 20 millimeters can be broken off (Fig. 4).

Areas Available—The Blake knife design is such that with two knives and blades set in the opposite directions, it is possible to operate in any area of the mouth.

Setting the Blades—(1) Two knives should be prepared at the same time. (2) The handles should be laid side by side with the heads facing upward. (3) The blades are inserted to point in opposite directions but with the cutting edges toward the operator (Fig. 5).

(4) When a sufficient cutting edge of approximately 6 millimeters shows beyond the head the holding Allen grub screw is tightened with the hexagonal key.

(5) The protruding tail end of the blade is broken off, either by hand or pliers, after the set screw has been tightened (Fig. 4).

Principles of Use

The Blake knife is most successfully used and controlled by a pulling action for the following reasons: (1) The blades are one sided and therefore easier to pull than push when cutting. (2) The knife allows an incision to be started at the back of the

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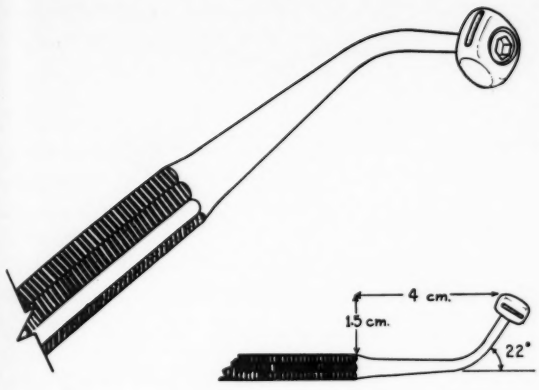
Author's Note: The illustrations for this article were made by D. Lane, artist and photographer, Faculty of Dentistry, University of Manitoba, Winnipeg, Canada.

*Associate Professor of Periodontology, Department of Oral Biology, Faculty of Dentistry, University of Manitoba, Winnipeg, Canada.

[1]Blake, G. C.: Universal Gingivectomy Knife Using Bard-Parker Blades, British Dent. J. **89**:226-227 (Nov.) 1950.



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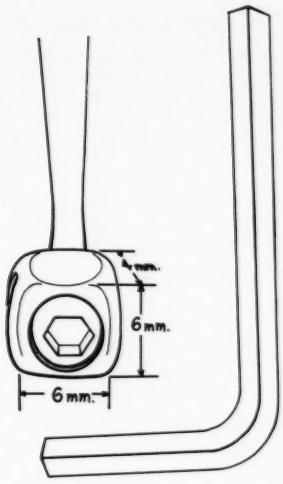

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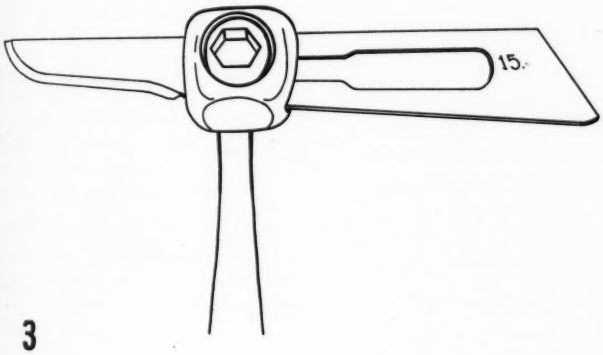

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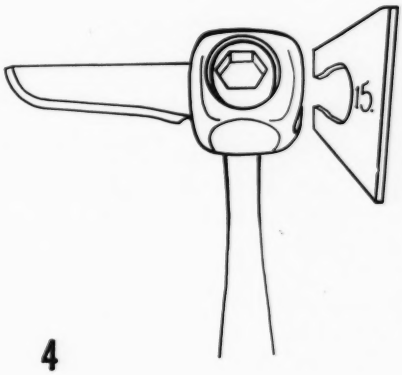

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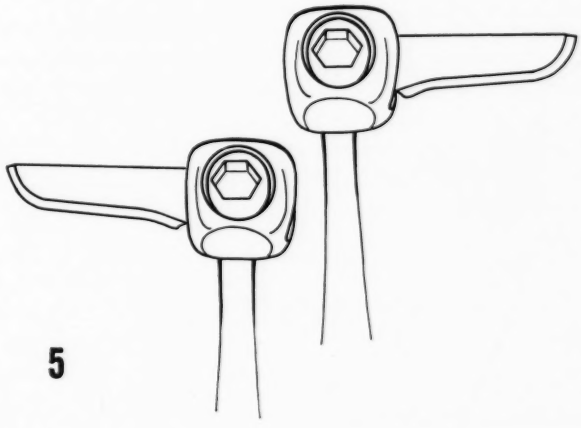
1.
A magnified view of the working end of the Blake handle is shown. The smaller drawing shows the dimensions and the angulation of the shank.

2.
This is an enlarged end-on view of the head of the knife showing the grub screw which is used to hold the blades in position. The angled hexagonal key is employed to tighten the Allen grub screw.

3.
A No. 15 Bard-Parker blade has been inserted so that approximately 6 to 9 millimeters of cutting edge is projecting from the slot in the head of the handle.

4.
The tail end of the Bard-Parker blade of approximately 20 millimeters is broken off leaving the cutting part projecting from the head and held securely by the Allen grub screw.



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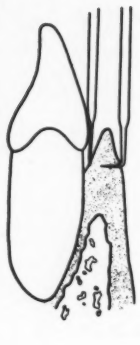
5.
Two Blake handles with blades inserted ready for operating. The heads are facing upward and the cutting edges are in opposite directions but facing the operator. With these two knives it is possible to operate in any area of the mouth.



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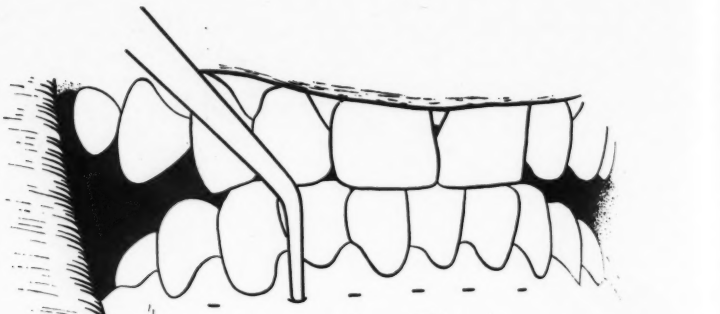

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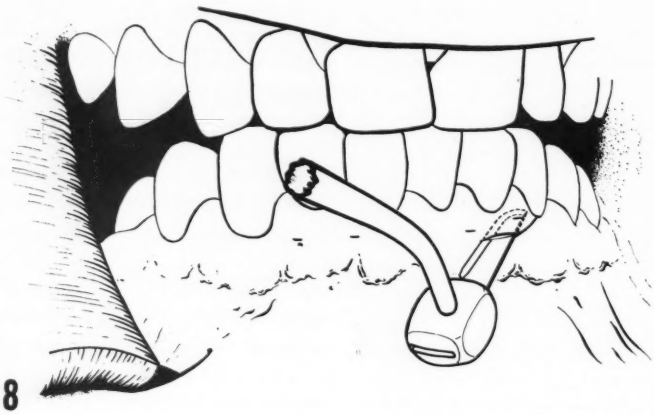

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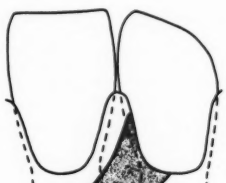

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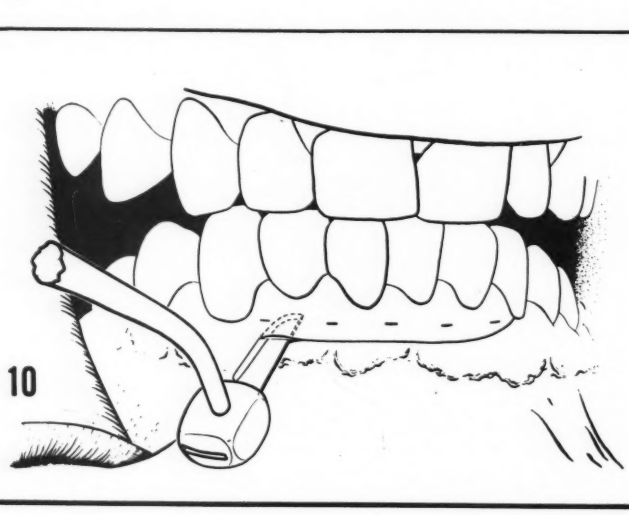

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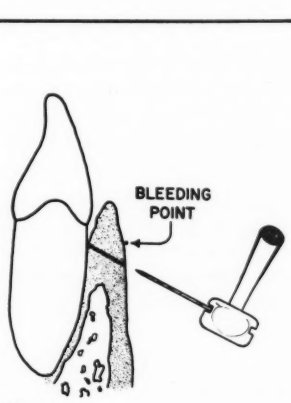

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mouth and to be brought forward without blood obscuring the field.

General Considerations—It is best to operate in the mandibular areas first, maxillary areas second, and to incise from the back forward. Similarly, it is preferable to operate on the lingual aspect of the teeth first and the buccal or labial aspect second.

Direction of Incisions—Since the knife is best controlled by a pulling action, incisions are made from the

patient's left to right when the operator stands behind, and from the patient's right to left, when he stands in front.

Technique for Gingivectomy of the Mandibular Incisor Region

The following instruments are required for this operation:[2]

1. Two Blake gingivectomy knives
2. Two Crane-Kaplan pocket-marking forceps
3. Four No. 15 Bard-Parker blades
4. Four No. 11 Bard-Parker blades
5. Anesthetic syringe and anesthetic solution
6. Sickle scaler
7. Set of periodontal curets
8. Double-ended plastic instrument
9. Pair of curved scissors
10. Periodontal pack

With the exception of the Blake gingivectomy knife and the Crane-Kaplan pocket-marking forceps, the other instruments needed are those commonly used in dental surgery.

Marking the Pockets—To guide the operator in making incisions the depths of the interdental periodontal pockets are marked. The pockets are usually deepest interdentally and successful surgery requires the removal of the gingiva to the base of these pockets. If the deepest pockets are marked the others need not be. The Crane-Kaplan pocket-marking forceps are used with the straight beak placed in the pocket, the angled beak on the gingivae, and with the handle parallel to the long axis of the tooth (Fig. 6). When the beaks are closed the gingiva is punctured and a bleeding point marks externally the true depth of the pocket (Fig. 7).

The Gingival Incisions—The excision of the pathologic gingivae is accomplished in three stages:

1. An initial incision is made both lingually and buccally to free the bulk of the gingivae.

2. The interdental gingivae are freed from the underlying connective tissue.

3. The soft tissue is freed from around the teeth and all of the tissue is then removed. The initial incision and the freeing of the interdental tissue is the same for buccal and lingual aspects. In the description that follows the steps are in the same order as those carried out in the operation.

Commencing the Incision—1. The lingual incision is made first, using the Blake knife with a No. 15 blade inserted. The incision is started in the midline of the lower left cuspid (Fig. 8) and is carried below the first bleeding point, found interproximally between the lower left lateral incisor and the left cuspid (Fig. 9).

2. The tip of the cutting blade touches the teeth and passes just below the base of the pocket.

3. The blade of the knife is held at an angle of 45 degrees below the horizontal so that the blade edge enters the gingival surface approximately 2 millimeters apical to the bleeding point. This cutting angle ensures a physiologic gingival contour postoperatively.

Straight Line Incision—Again using the bleeding points as a guide, a straight incision is added to the commencing incision and is continued from below the first bleeding point in the lower left lateral incisor area to the last bleeding point in the lower right lateral incisor region (Fig. 10). The 45-degree angle of the knife blade is maintained so that a physiologic contour of the gingivae is achieved (Fig. 11).

Completing the Incision—The incision is finished in the midline of the lower right cuspid in the same manner as it was commenced in the first lower left cuspid area. This ensures removal of the pocket in the lower left cuspid area both labially and lingually.

The excision of the buccal gingivae is the next step and is accomplished in the same way as the lingual incision (Figs. 8, 9, 10, and 11).

The Interdental Tissues—The No. 11 blades are used in place of the No. 15 blades. The knife is inserted interdentally in the same manner and direction as it was when the buccal and lingual incisions were made (Fig. 12). The knife is used interdentally in a mesiodistal direction to free the soft tissue, first from the lingual and then from the buccal area.

Removal of the Tissue—The soft tissue is now excised sufficiently and may be teased away from the teeth using the Ivory sickle scaler and a pair of tissue forceps or tweezers. Usually the lingual tissue can be removed in one piece and the buccal tissue in another piece (Fig. 13).

Final Measures

Curettage—When the soft tissue has been removed from around the teeth the area can be carefully inspected and remnants of tissue excised. In the original subgingival areas of the teeth, now supragingival, the remaining calcareous deposits should be removed and the root surfaces smoothed with curets.

Packing—A number of periodontal packs of equal value are available

[2]Trott, J. R.: Gingivectomy in Periodontal Treatment, Australian Dent. J. **58**:297-302 (Oct.) 1954.

6.
A buccolingual view of the Crane-Kaplan pocket-marking forceps in use. The straight beak is at the base of the periodontal pocket, while the angulated beak punctures through the external surface of the gingivae.

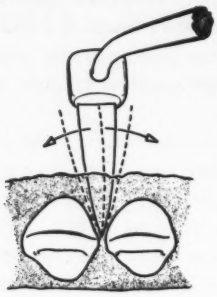
7.
A labial view of the mandibular incisor region showing the pockets marked in the interdental regions with the Crane-Kaplan forceps.

8.
The Blake knife commencing the incision in the midline of the lower left cuspid. By this time the initial incision has been completed on the lingual aspect of the teeth.

9.
The shaded area shows the amount of pathologic gingiva which will remain if the incision is started in the interdental papilla.

10.
This shows the Blake knife traversing the gingivae from the lower left lateral incisor and cuspid to the lower right lateral incisor and cuspid in a straight line. It will be noted that the blade is entering the soft tissues approximately 2 millimeters apical to the bleeding points and that the head of the knife is held below the horizontal so that a physiologic contour can be produced.

11.
A buccolingual view showing the angle that the knife takes through the soft tissue, so that the pocket is eliminated and a satisfactory gingival contour produced.



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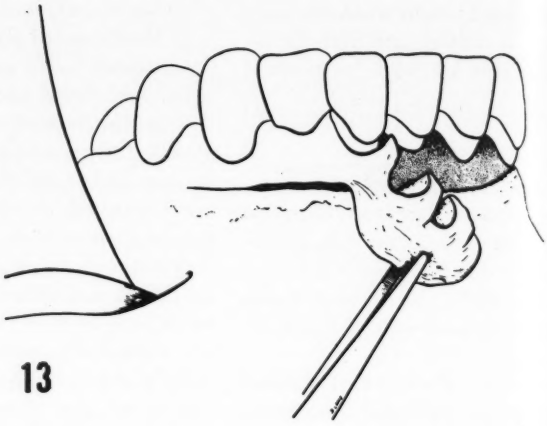

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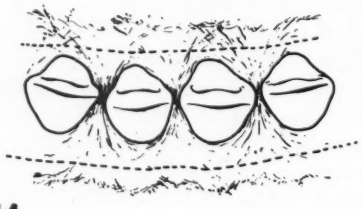

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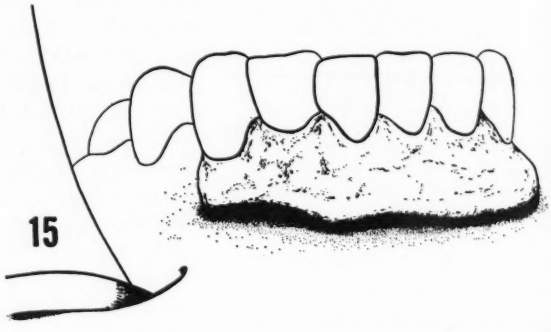

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commercially and may be used for convenience or a simple zinc oxide pack may be made and used. The following steps are taken:

1. An ordinary creamy mix of zinc oxide and oil of cloves is made up and wisps of cotton wool are laid out separately.

2. Each wisp is picked up with the flat plastic instrument and pushed between the teeth until a sufficient bulk of cotton wool is present both buccally and lingually.

3. The cotton wool is spread like a wheat sheaf until cotton wool from each interdental area meets and overlaps in the midline of each tooth (Fig. 14).[3]

[3]Wade, A. B.: Where Gingivectomy Fails, J. Periodont. **25**:189-198 (July) 1954.

12.
The Blake knife with a No. 11 blade inserted, being used in a mesiodistal direction in an interdental area to free the interproximal tissues.

13.
The excised gingival tissue being removed with tissue forceps. Notice that with a straight line incision and the correct bevel a physiologic gingival contour is produced.

14.
Dry wisps of cotton wool are placed interproximally and fanned out buccally and lingually in the shape of a wheat sheaf.

15.
The completed gingivectomy pack in place.

4. The zinc oxide paste is applied over the cotton wool in excess, and pressed into the cotton wool and the interproximal areas with a piece of moist gauze which has been squeezed as dry as possible. The pack is then trimmed with scissors to cover the raw tissue and petrolatum is smeared on the surface of the pack to protect the patient's lips from the oil of cloves (Fig. 15).

Summary

1. The Blake gingivectomy knife is described in detail and the advantages of a removable type blade knife are discussed.

2. A simple gingivectomy technique is described using the Blake knife.

University of Manitoba

TEMPOROMANDIBULAR JOINT DYSFUNCTION

*and Pathologic Occlusion**

Part Two

NATHAN ALLEN SHORE, D.D.S., New York

This is the second installment of a two-part illustrated article which stresses the importance of recognition of one of the causes of pathologic occlusion. Classification of abnormal occlusal situations into five main classes is made and each classification is described. This article deals with the last four classifications.

Class II: Pathologic Mandibular Retrusive Relationship

The interfering occlusal contact that causes a pathologic mandibular retrusive relationship is usually a unilateral one and is most often due to unopposed erupting teeth.

Schematic Illustration—As shown in Figure 10 the interfering occlusal contact at E deflects the mandible as it passes through the centric-relation arc, CRA. The mandible then closes into the habitual convenience-relationship, H, moving through the retrusive medial path, EH. The center of the condyle, X, has been shifted posteroinferiorly from the intersection of the imaginary lines AB and CD. This posteroinferior position is caused by the rocking action of the mandible on E as the patient attempts to occlude his teeth. Note the joint gap, F, which is narrower posteriorly and wider superiorly and anteriorly. When the mesial plane or the mesial marginal ridge of the lower third molar cusps makes an interfering contact with the distal marginal ridge of the upper second molar cusps, the mandible is guided distally; consequently the condyles shift in the mandibular fossae.

Early Symptoms—The early stages of pathologic mandibular retrusive relationship are associated with a vague, hard-to-define sense of discomfort which the patient usually has trouble describing with any degree of precision. Accompanying the occlusal disharmony, there are also such temporomandibular joint symptoms as tenderness, clicking, and crackling noises.

Later Symptoms—In the more advanced stages of pathologic mandibular retrusive relationship, the presenting symptoms are pericoronitis of the extruded tooth, as well as gingival swelling and severe localized pain.

Class III: Increased Vertical Relationship

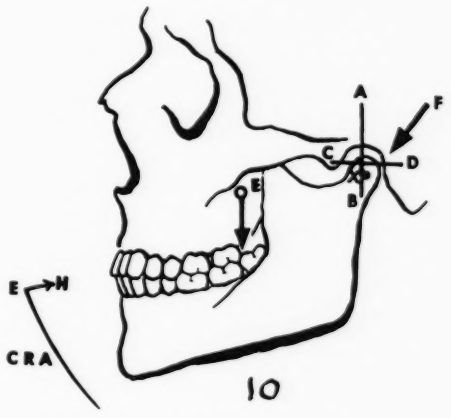
In a majority of cases, the interfering occlusal contact that results from increased vertical relationship is caused by a restoration in supraocclusion (Fig. 11).

Causes—In this situation the mandible again is deflected by the interfering occlusal contact, E, as it passes through the centric-relation arc, CRA, into the habitual convenience-relationship, H, which is slightly anterior to CRO. The center of the condyle, X, is shifted inferiorly from the intersection of lines AB and CD, resulting in a wider joint gap, F.

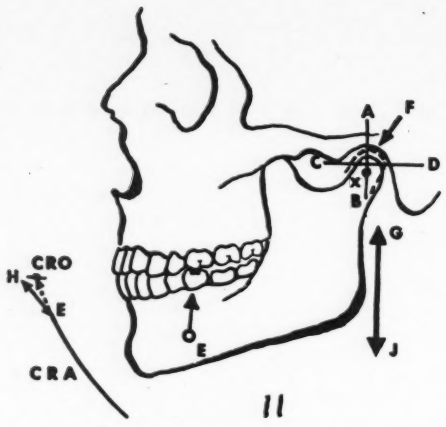
Two-Directional Movement Shown

Author's Note: The illustrations are from the book by Nathan Allen Shore, Occlusal Equilibration and Temporomandibular Joint Dysfunction, Philadelphia, J. B. Lippincott Company, 1959.

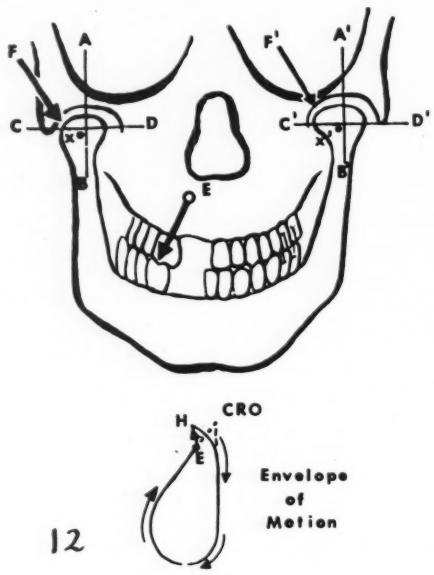
*From the Department of Surgery, the New York Hospital-Cornell Medical Center.



10.
Class II pathologic mandibular retrusive occlusion, profile view. Interfering occlusal contact at E results in deflection of centric-relation arc, CRA, into habitual convenience-relationship, H, moving through retrusive medial path, EH. The center of the condyle, X, has been shifted posteroinferiorly from intersection of imaginary lines AB and CD. Note the joint gap, F, which is narrower posteriorly and wider superiorly and anteriorly.



11.
Class III increased vertical relationship, profile view. Interfering occlusal contact, E, is the result of a restoration in supraocclusion. Centric-relation arc, CRA, is deflected by interfering occlusal contact at E into habitual convenience-relationship, H, which is slightly anterior to CRO. Center of the condyle, X, is shifted inferiorly from intersection of imaginary lines AB and CD, resulting in wider joint gap, F. Note arrows HE and GJ, indicating two-directional movement.



12.
Class IV pathologic lateral mandibular shift, frontal view. Cross bite interfering occlusal contact, E, deflects mandible laterally, causing it to shift to H, habitual convenience-relationship. Envelope of motion shows normal path of mandible (dotted lines through E to CRO) and actual deflection from E to H. Note lateral and inferior shift of center of right condyle, X; joint gap, F, is narrower laterally but wider superiorly and medially. Center of left condyle, X', is positioned medially and inferiorly; joint gap, F', is narrow medially and wider superiorly and laterally.

—As the muscles attempt to bring the mandible into centric-relation occlusion the interfering occlusal contact acts as a pivotal point on which the mandible rocks back and forth. In Figure 11 the arrows HE and GJ indicate two-directional movement, illustrating the teeter-totter action that takes place as the teeth anterior to E and posterior to E are alternately in closure.

Joint Dysfunction Produced—Morris[3] points out that this rocking action of the mandible produces temporomandibular joint dysfunction by stretching the suspensory ligaments and the internal pterygoid and masseter muscles (the mandibular sling) at the angle of the mandible.

Freeway Space May be Destroyed—Another cause of increased vertical dimension is the creation of a new level of occlusion by bridges or by partial or full dentures that obliterates the freeway space. It is possible to produce an open-bite case on the centric-relation arc. In such a case, the teeth would be in contact at the point of physiologic rest position, when actually they should be separated.

Muscle Tension Produced—Absence of a freeway space which should provide the physiologic rest position produces abnormal muscle tension which will, in turn, result in muscle spasm.

Class IV: Pathologic Medial Or Lateral Protrusive Shifts of the Mandible Due To Cross Bite Relationships

The usual situation in a cross bite interfering occlusal contact in centric relation is a lateral mandibular shift to the left or to the right as the patient completes the cycle of closure.

Steps in Closure Cycle—Cross bite cases usually involve one or more pairs of opposing teeth in the cuspid, bicuspid, or molar regions:

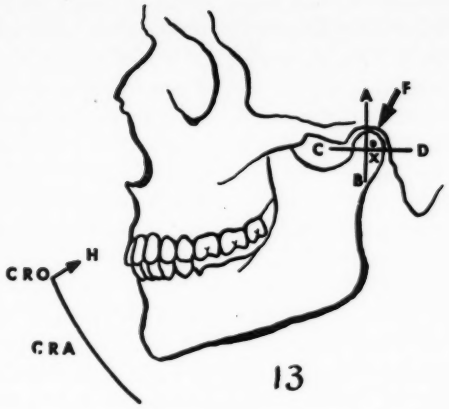
1. As the mandible closes in centric relation, the buccal plane of the buccal cusp of the upper tooth strikes the lingual plane of the buccal cusp of the lower tooth.

2. The resultant interfering occlusal contact shifts the mandible laterally and protrusively as it attempts to complete the cycle of closure.

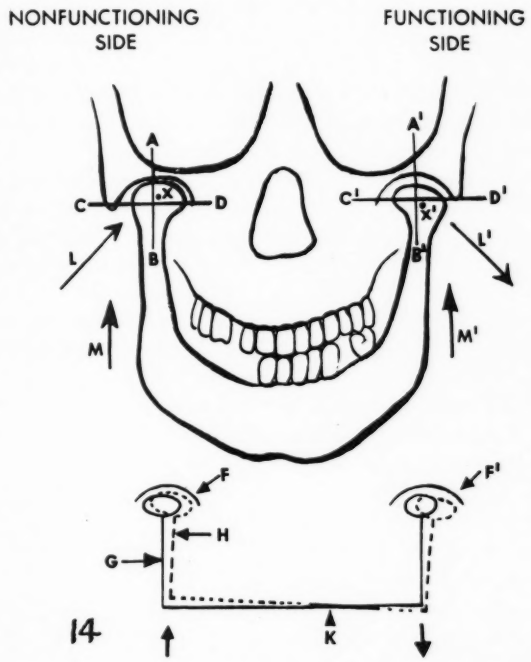
3. The mandible is caught in a vise-like grip as the teeth struggle with the musculature.

Lateral Mandibular Shift Illustrated—In Figure 12 the dotted lines at the peak of the envelope of motion, CRO,

[3]Morris, H. G: Pathological Temporomaxillary Mandibular Relation, J. Periodont. **22**:216 (Oct.) 1951.



13.
Class V reduced vertical relationship, profile view, due to bilateral loss of supporting posterior teeth. Mandible traverses centric-relation arc, CRA, to centric-relation occlusion, CRO, but is shifted to H because of absence of lower posterior molars. Note superior and posterior shift of center condyle, X, and joint gap, F, which is narrower posteriorly and superiorly, and wider anteriorly.



14.
Diagram of reduced vertical relationship, frontal view, due to unilateral loss of supportive posterior teeth. Teeth on functioning side act as fulcrum, K. G represents normal position of mandible; H (dotted line) is strained position into which it is forced. Joint gap, F, on nonfunctioning side, is diminished; joint gap, F', on functioning side, is widened medially and superiorly. L and L' indicate direction of condylar movements; M and M', contractions of muscles. Note superior and medial shift of center of condyle, X, on nonfunctioning side, and inferior and lateral shift of condyle X' on functioning side.

represent the beginning of the mandibular movement from centric-relation occlusion and its normal return. The normal path would be through E to CRO.

Mandible Deflected Laterally— The interfering occlusal contact at E deflects the mandible laterally, causing it to shift to H, the habitual convenience-relationship. The center of the right condyle, X, has been shifted laterally and inferiorly from the intersection of the imaginary lines AB and CD; the joint gap, F, is narrower laterally but wider superiorly and medially. The center of the left condyle, X', is positioned medially and inferiorly; the joint gap, F', is narrow medially but wider superiorly and laterally.

Injury from Pathologic Cross Bite Relationship—A medial shift of the mandible occurs when the lingual plane of the upper buccal cusp strikes the buccal plane of the lower lingual cusp; such a shift is generally accompanied by a slight mandibular protrusion and facial asymmetry as the patient closes in habitual convenience-relationship. Wild and Bay[4] have observed, in the course of skull studies, damage to the mesial portion of the condyle and the lateral wall of the fossa in cases of pathologic cross bite relationship.

Class V: Reduced Vertical Relationship

Pathologic reduced vertical relationship is most commonly caused by loss of posterior teeth; the loss may be bilateral or unilateral. The two other causes of a closed bite (reduced vertical relationship) are (1) excessive wear of the occlusal surfaces of the natural dentition, and (2) partial eruption of the permanent dentition.

Bilateral Loss of Posterior Teeth—Figure 13 is a schematic representation of reduced vertical relationship due to bilateral loss of supporting posterior teeth. The mandible traverses the centric-relation arc, CRA, and reaches centric-relation occlusion, CRO. Because of the absence of the lower posterior molars, however, the mandible is guided upward and backward by the muscles and the lingual inclined planes of the upper anterior teeth to point H. An accompanying movement in the temporomandibular joint results in a superior and posterior shift of the center of the condyles, X, and a narrower joint gap at F.

[4]Wild, H., and Bay, R.: Lever Action of the Mandible, JADA **35**:596 (Oct.) 1947.

Unilateral Loss of Posterior Teeth—Figure 14 illustrates the resultant unilateral function from unilateral loss of supporting posterior teeth. Unilateral mastication may cause a posteromedial shift of the condyle of the unsupported side because of the lack of resistance to muscle pull as a result of the absence of supporting teeth. Temporomandibular joint symptoms in the unsupported side also appear.

Temporomandibular Joint Symptoms May Appear— Conceivably, temporomandibular joint symptoms on the unilateral chewing side may appear if there is an interfering occlusal contact that forces the condyle on the functioning side into an abnormal position.

All Components May be Affected—Wild and Bay[4] have shown that under such circumstances not only all the components of the temporomandibular joint on the nonfunctioning side but also those of the entire skull will be affected.

Unilateral Loss of Posterior Supporting Teeth—This situation frequently produces condylar changes in the opposite temporomandibular joint: (1) The mandible acts as a lever, and the teeth as a fulcrum, as illustrated in Figure 14. (2) The teeth on the functioning side represent the fulcrum, K. (3) Because of the absence of teeth on the nonfunctioning side, the contractions of the muscles, M, intrude the condyle into the fossa.

Muscles Stretched—On the functioning side the muscles, M', undergo isometric contractions, with the teeth acting as a fulcrum. As a result of this lever action a stretching of the muscles on the functioning side occurs.

Condyle Shifts—On the nonfunctioning side, the center of the condyle, X, has shifted superiorly and medially from the intersection of lines AB and CD to close joint gap F.

Joint Gap Produced—On the functioning side X' has shifted inferiorly and laterally from the intersection of A'B' and C'D', producing a joint gap F' that is widened medially and superiorly. The arrows L and L' indicate the direction of movement of the respective condyles.

Abnormal Situation—Contrast the normal position of the mandible, G, with H, the strained position that it is forced to assume. This abnormal situation eventuates in the disintegration of the entire masticatory organ.

Common Causes of Closed Bite—When the teeth are in terminal closure, the closed or deep bite produces an increase in the freeway space and a decrease in the vertical dimension:

1. The commonest cause of the closed bite is the loss of posterior teeth, either bilateral or unilateral.

2. The next most frequent cause of reduced vertical relationship is excessive wear of the occlusal surfaces of the natural dentition; the height of the crowns of the teeth is decreased, resulting in reduced vertical relationship and concomitant sequelae of the temporomandibular joints.

3. The third case of a closed bite is partial eruption of the permanent dentition.

Result of Closed Bite—No matter what the cause, a closed bite invariably alters the occlusal relationship of the teeth and the interrelationships of all the parts of the masticatory organ.

Temporomandibular Joint Symptoms in All Classes—Although all cases of Costen's temporomandibular joint syndrome are due to lack of posterior tooth support, and consequently fall into the category of the first cause of Class V cases, temporomandibular joint symptoms may also be seen in cases of the other four classes. Injudicious labeling of all temporomandibular joint symptoms as due to Costen's syndrome must therefore be avoided by the conscientious practitioner.

Conclusion

A method for the classification and diagnosis of pathologic occlusion has been presented. Differentiation into five main classes has been made, and each one has been illustrated.

Emphasis has been laid on the recognition of the cause of pathologic occlusion,[5,6] namely, interfering occlusal contacts. Every occlusal change produces concomitant positional changes of both condyles within the temporomandibular joints.[7,8] These condylar positional changes have been represented diagrammatically, and can be corroborated by the roentgenographic techniques employed by the author.[9]

Because of the mutual interdependence of the component parts of the masticatory organ, it is possible to control the entire system by exerting control over one of its parts. Specifically, by maintaining control over the teeth (correcting the occlusion), control can be exerted and maintained over the periodontium, the alveolar bone, the neuromuscular system, and the temporomandibular joints.

Classification and diagnosis of pathologic occlusion is the first step. It must precede therapy. The detailed corrective procedures can be found in Chapters 9 through 12 of the author's book.[10]

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[5]Schuyler, C. H.: Fundamental Principles in Correction of Occlusal Disharmony, Natural and Artificial, JADA **22**:1193 (July) 1935.
[6]Schuyler, C. H.: Correction of Occlusal Disharmony of the Natural Dentition, New York J. Dent. **13**:445 (Oct.) 1947.
[7]McLean, D. W.: Occlusal Orthopedics, Dent. Cosmos **74**:313 (Apr.) 1932.
[8]Beyron, H. L.: Occlusal Changes in Adult Dentition, JADA **48**:674 (June) 1954.
[9]Shore, N. A.: Occlusal Equilibration and Temporomandibular Joint Dysfunction, Philadelphia, J. B. Lippincott, 1959, Chapter 8.
[10]Shore, N. A.: Occlusal Equilibration and Temporomandibular Joint Dysfunction, Philadelphia, J. B. Lippincott, 1959, Chapters 9-12.

654 *Madison Avenue*

Melkersson's Syndrome (Persistent Swelling of the Face, Recurrent Facial Paralysis, and Lingua Plicata): Report of a Case

SIDNEY N. KLAUS, M.D., and LOUIS A. BRUNSTING, M.D., Rochester, Minnesota

Early Cases

Melkersson's syndrome is the rarely encountered triad of recurrent facial paralysis, recurrent—eventually permanent—facial edema, and lingua plicata [scrotal tongue.] Although this

odd complex of symptoms has been mentioned infrequently in the American literature, it recently has attracted wide interest in Europe.

First Description—Melkersson[1] in 1928 first described facial edema in a 35-year-old man who had a history of facial paralysis. Two years later lingua plicata was added to the clinical picture in a case report. In 1933, 67 cases were reported of recurrent facial swelling seen at the Mayo Clinic over a 22-year period. Facial paralysis had preceded the edema in 13 of these cases and it was concluded that a disturbance in the trophic, vasomotor, or motor nerves might be an etiologic factor.

First Complete Syndrome Reported—In this country, the first complete although probably unrecognized case of the Melkersson syndrome to be reported was described in 1938. In three patients with macrocheilia due to hyperplasia of the labial salivary glands, it was noted in passing that one gave a history of preceding facial paralysis and showed a furrowed tongue.

Report of Case

A 65-year-old American-born housewife, first seen at the Clinic in November, 1958, complained of a swollen condition of the lower lip that had occurred first in February, 1957. Initially the edema had been transient, the lip exhibiting no enlargement between episodes of swelling; however, for the 10 months preceding her visit to the Clinic the edema had been persistent. The lip was neither painful nor pruritic, and the patient gave no history of dental infection although she had had occasional "cold sores" of the upper lip and nasal alae in the past 25 years. Her history revealed three episodes of left facial paralysis at ages 18, 26, and 38; each had lasted 4 to 6 weeks and had cleared spontaneously and completely.

Physical Examination—(1) A firm, nonpitting edema of the lower lip, more marked on the left side, and extending down over the chin was noted. (2) A moderate degree of plication was observed in the tongue. (3) There was no residuum from the previous episodes of facial paralysis. (4) Findings from the remainder of the physical examination were within normal limits. (5) Roentgenologic studies of the chest indicated a Ghon complex, and those of the upper abdomen gave evidence of a duodenal ulcer.

The reports from laboratory examinations of the peripheral blood and the urine were normal. The response to the VDRL test was nonreactive. A hearing examination showed no defect.

Previous Treatment Unsuccessful—Various forms of treatment had been employed during the early stages of the disease, all without benefit. These involved antihistaminic drugs, smallpox vaccinations, a course of Candida albicans vaccine, systemic steroid, and finally, complete dental extraction.

Diagnosis and Treatment—On the basis of the history and physical findings a diagnosis of Melkersson's syndrome was made. Treatment by means of roentgen irradiation to the face was carried out and diphenhydramine (benadryl) was prescribed.

Discussion

Component Features—A review of the literature has shown that Melkersson's syndrome can be manifested in a number of ways, many times incompletely or in formes frustes. The most frequently reported type includes all three parts of the triad as described above. Atypical cases, however, have been described, consisting of (1) facial paralysis and edema without lingua plicata, (2) facial edema and lingua plicata without paralysis, and (3) facial paralysis and lingua plicata without edema.

Recurrent Paralysis: Usually the facial paralysis is recurrent, the first episode developing most commonly before the twentieth year of age. It may be partial or complete, and occasionally sensory defects in taste along the anterior two-thirds of the tongue are noted. Clinically the paralysis is undistinguishable from Bell's palsy. At least one episode of the paralysis ordinarily precedes the onset of the edema; but the association may be coincident or it may be spaced by as long as 25 years. The disorder in most cases clears without residua.

Edema Recurrent Process: The peculiar brawny edema of Melkersson's syndrome is also a recurrent process, as mentioned above. The swelling usually affects the lips—upper, lower, or both—and may be either one-sided or bilateral. Other locations for the edema have included the chin, cheeks, and tongue. Unlike angioneurotic edema, which it resembles early in its course, the swelling in this syndrome is limited to the face. Usually it is nontender and nonpitting, and the color may vary from that of the surrounding skin to a moderate red-brown. In its onset the swelling may be abrupt, occasionally reaching its full extent in a few hours. Occasionally, slight fever may accompany exacerbations. The syndrome is found with equal frequency among men and women. In a series of 8 cases reported the onset of the paralysis occurred most commonly in the second decade of life, ranging from the eighth to the twenty-fifth year.

Unconstant Finding: The occurrence of lingua plicata in these patients is perhaps the most perplexing part of the picture and at the same time, the least constant finding of the triad. One observer has stated that the lingual abnormality is present in only 25 per cent of cases. Another observer, who has reported the largest series to date, found marked lingua plicata in seven of his 21 patients and some degree of furrowing in the tongues of six more of them.

Inherited Trait: Lingua plicata is a congenital stigma, not the result of chronic swelling of the tongue, for many patients recall that they had strange-looking tongues as youngsters. Occasionally it has been noted as a family characteristic.

Possible Significance of Furrowed Tongue: The incidence of lingua plicata alone among the general population is said to be 0.5 per cent. In one study four examples of unequivocal lingua plicata were found among 103 patients with peripheral seventh-nerve (Bell's) palsy. Of the 103, 12 gave a history of paralysis that was recurrent, and—significantly—three of the four with lingua plicata were in this restricted group. It was concluded that a furrowed tongue might be an

(*Continued on page* 482)

POSTEXTRACTION NEUROMA:

A Cause of Trigeminal Neuralgia

S. L. DRUMMOND-JACKSON, L.D.S., R.C.S., London, England

DIGEST

This article discusses a possible cause of trigeminal neuralgia which may be detected by the dentist. Means of diagnosis are described and several procedures for relief of the distress are presented.

Initial Symptoms

It is rare for a case of trigeminal neuralgia to be referred to the neurologist before some dental attempts have been made to remove one or more possible dental causes.

Possibilities of Dental Treatment Exhausted—Teeth in the area of distribution of the affected nerve are progressively suspected and removed. When the general practitioner finally refers the patient to the neurologist it is often with the report that nothing further can be done in the dental area.

Area Pronounced Free of Suspicion—When radiographic evidence discloses no hidden roots or potential source of infection, accepted dental teaching allows the area to be pronounced free of suspicion. Thereafter little or no attention is paid to possible causes of pain in the maxilla.

Possible Source of Difficulty

If the cause is in fact in the maxilla, however, it is necessary to show that the accepted dental approach to the problem is unsound. Though the cause is sought as a hidden tooth root, it is clearly the *peripheral nerve ending within that root* that is the possible source of the trouble.

Theory Demonstrated — The dramatic cure reported after removal of such a root was actually due to the nerve (or neuroma) *within or attached to it* and which was removed along with the root.

Residual Nerves Potential Neuromata—In cases in which the reason for extraction must have included infection, the risk of nerve endings being left either infected or subject to the influence of surrounding pathologic processes, and the proportion of residual nerves without demonstrable roots which are potential neuromata, is increased—the most likely cause of a future trigeminal neuralgia.

Contributory Causes

If this reasoning is valid, the possibility of a "postextraction neuroma" resulting from a residual nerve is high. Contributory causes might include the following:

1. *Traumatic*—Effects of the stretch-severance always suffered during extraction of the tooth.

2. *Mechanical*—Recoil of the nerve on itself after severance or withdrawal within the sheath to upset the absorptive processes.

3. *Pathologic*—The effects of pathologic changes in the surrounding tissues.

4. *Bone Change*—The nerve lies in that section of bone which later will undergo appreciable and unique changes to form and to support the dental ridge. The degree of consolidation will vary with circumstances; it would be more advanced in a section of upper ridge opposing an isolated lower tooth, and where no denture was worn, than in a position of little

1.
In theory it is assumed that when a tooth is extracted the nerve severs cleanly at the apical junction.

2.
In practice every nerve is severed by traumatic overstretching at the weakest point.

3.
Anatomy, infection, fracture, all increase the hazard of such traumatized free nerve end being left in the socket. Each is a potential neuroma, often surrounded by residual infection.

4.
Drawing of root tip removed from molar region with free nerve end. The occasional cures reported after root removal are in fact due to removal of causative nerve tissue attached to the root but not recognized.

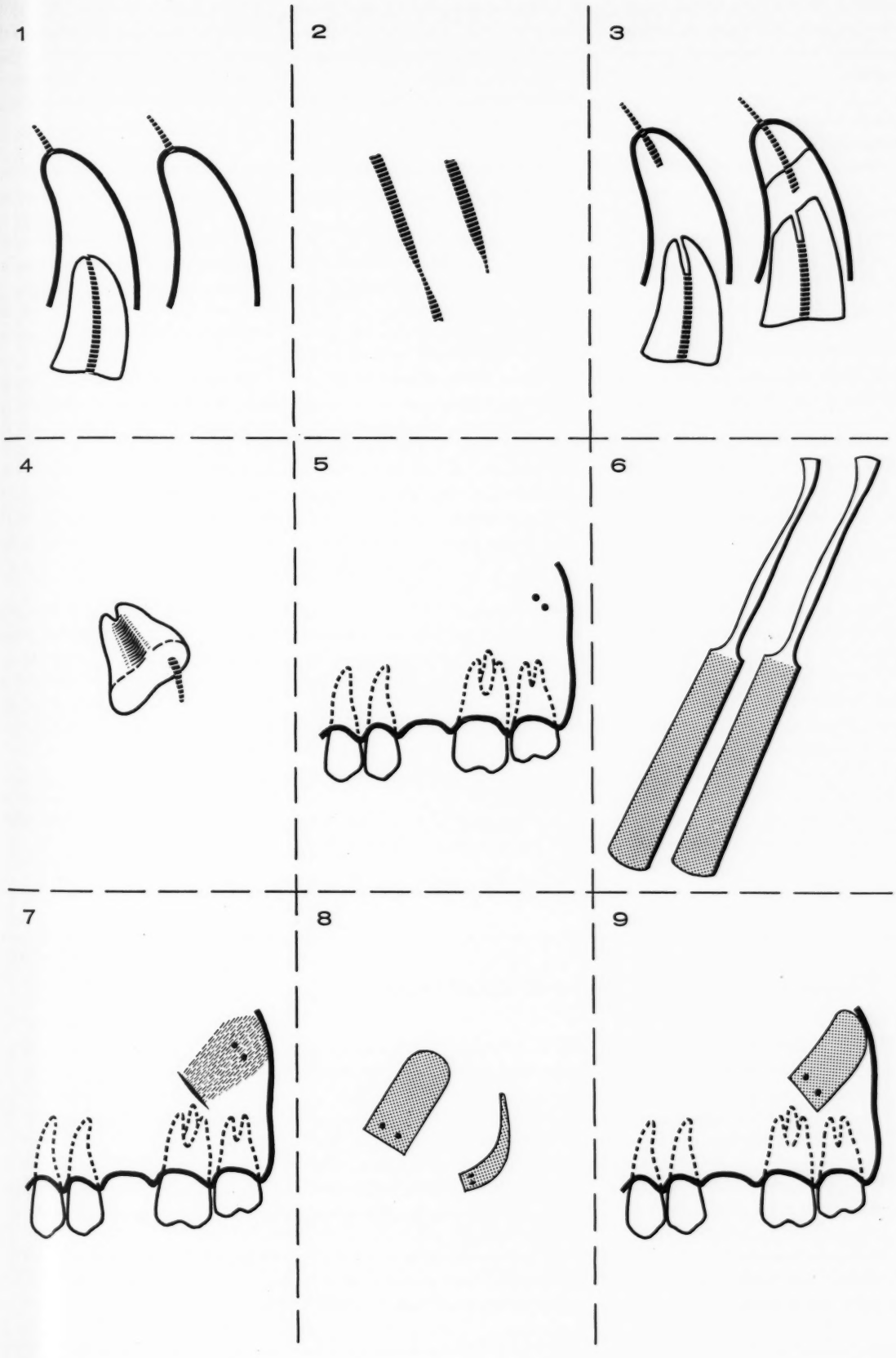
5.
The posterior superior dental nerve leaves the maxilla by one or more exits grouped together in a position which varies little; about one inch above and one quarter inch posterior to the midbuccal crest of the third molar.

6.
Special instruments devised for safe severance of the nerve at its exit from the maxilla by scraping of the area in close contact with the bone.

7.
Incision and area to be scraped. Note: The temporary nature of cures reported after such severance—or destruction by injection—is due to the nerve being allowed to regenerate.

8.
Regeneration of the nerve may be prevented by insertion of a plastic or tantalum plate, shaped to cover the nerve exits and having two holes at the lower border for accessible pinning in position.

9.
Position of pinned plate.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function. Any nonfunctional unabsorbed nerve in the former area would be subject to conditions of unusual pressure.

Confirmation in Clinical Diagnosis

Although individual neuromata could no doubt be located by layered radiographs, a simpler method is needed to determine the approximate location of the cause of pain without the possibility of doubt.

Possible Method of Confirmation—If a starting point in the distribution of the posterior superior dental nerve is suspected as the source of the pain, and if the case is seen at an early stage, the nerve may be anesthetized at its exit from the maxilla, and the stimulators which are known to induce the pain triggered to confirm at once whether the cause is in this nerve. A trilene inhaler should always be available for immediate use if required.

Temporary Relief may be Afforded—The posterior superior dental nerve leaves the maxilla by a single foramen, or a close group of smaller foramina, seldom higher than 30 millimeters above or more than 6 millimeters posterior to the midbuccal crest of the alveolus of the third molar.

Position may Have to be Estimated: If the third molar is absent the position must be assessed by estimated measurement allowing for bone resorption, or by transferred triangulation if the third molar of the opposite side is present.

Nerve Severed: The nerve may be severed at its exit from the maxilla by means of a curved subperiosteal scraper, bevelled to enable close contact with the bone to be maintained throughout.

Permanent Relief—Solution of the problem of how best to prevent regeneration of the nerve should be the means of permanent relief:

(1) A simple method is the insertion of a small curved plate to cover the maxillary exit, pinned at its accessible lower border.

(2) Where the affected nerve lies within a channel, as the mandibular nerve, a section can be replaced by a metal, plastic, or wax implant without loss of any further tooth.

(3) Where there is no channel, a transverse plate should be effective without giving rise to further or additional symptoms.

(4) If the site of the causative neuroma is suspected, the area of the former tooth apexes can be excised. After this no further treatment should be needed if the case is at an early stage.

Summary

It can be said of trigeminal neuralgia that (1) the condition is rare, (2) the cause unknown, (3) the development slow and sporadic, (4) the course unpredictable, (5) the diagnosis difficult, (6) the pain intractable, and (7) the customary treatment fraught with hazard.

If dental diagnosis, however, at present inadequate, could ensure that all cases were recognized at a much earlier stage than at present, and referred to a specialist, there is reason to hope that a maxillary terminal neuroma might then be shown to be the case. Simple treatment at this early stage would effect a permanent cure.

Meanwhile it is a grave responsibility for the dentist to retain the patient while he "clears" his area in the customary way. Teeth should never be removed merely on suspicion. In many cases it will be less of a hardship to the patient to have the maxillary nerve severed, and rejunction prevented, than to have a valuable molar removed.

Any consideration of postganglion resection with its hazards, before careful checking of the maxillary innervation, seems as unjustifiable as the cutting off of the main by an electrician before he has checked the local fuses.

53 *Wimpole Street*

Adapted from *British Journal of Clinical Practice* **13**:867 (December) 1959.

Teeth of London School Children

Some of the factors which contributed to the marked improvement of the caries picture between 1929 and 1947 and the subsequent deterioration in later years have been discussed at length in previous reports. No further evidence has been forthcoming to modify the tentative conclusions already presented—namely, that the reduction in the disease was partly the result of more scientifically controlled nutrition of pregnant women and infants during the war and postwar period of rationing, when among other things the calcifying properties of the diet were increased. The subsequent freer choice of diet when cheaper foods, including cereals, were more easily obtainable, together with the reduction in the consumption of milk and cod-liver oil, could account for some of the deterioration from 1947 to 1955. One study suggests that some of the increase in the incidence of caries in recent years may be due to the rapid growth in popularity of iced lollies and similar confections. The fluorine in the water could not have been concerned in the changes noted in these reports, as it has remained low and constant throughout.

Adapted from *British Medical Journal* No. **5110**:1443 (Dec. 13) 1958.

The EDITOR'S *Page*

THERE ARE thousands of dental patients who can be benefited by minor repositioning of their teeth. Full scale orthodontic treatment for certain adults may be contraindicated. That does not mean that such patients are beyond help for improvement of their conditions. Minor tooth movement by simple appliances may correct many unsightly and unhygienic conditions. Such treatment may also be applied in prosthetic cases.

Minor tooth movement does not mean a procedure that is simple. It refers to teeth that are moved short distances. The same appreciation of biologic fundamentals, physiologic awareness, diagnostic skills, and mechanical proficiency applies in this form of therapy as in any other. Minor tooth movement is neither a substitute for nor a short cut to major orthodontic treatment.

In a new book commendable for its clear exposition and excellent illustrations, the general practitioner is told and shown how he may correct the cases of local malpositions that are challenges to every dentist.[1]

Many authors set out with high purpose and fail in execution of their objectives. This is not the case with the book by Hirschfeld. He states his purpose and fulfills his mission:

"(1) Is there a malposition of one or several teeth in this case?

"(2) What has caused the malposition?

"(3) Can I as a general practitioner correct it?

"(4) Should I attempt to correct it?

"(5) If so, what method should I use?

"(6) How shall I proceed?

"(7) What must I do to make the tooth stay in its correct position after it has been moved?"

The dentist is told exactly what he may do to improve esthetics by minor tooth movement: closure of diastema; correction of extruded anterior teeth; treatment of anterior cross bite relations.

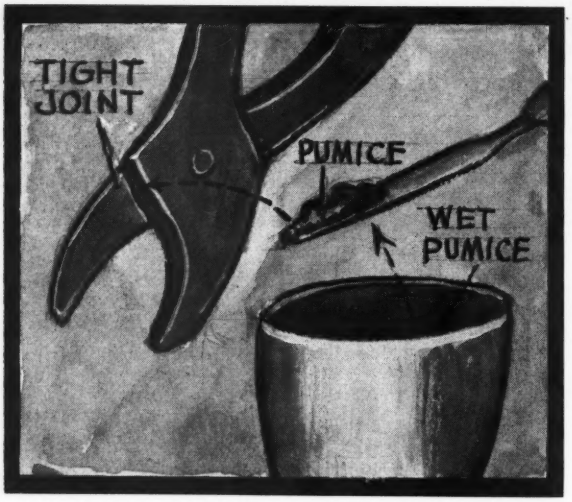
The dentist is informed how he may move teeth to prepare the mouth for prosthetic replacement: by improving the position of abutment teeth to place them in more favorable vertical position; by making edentulous areas larger or smaller to make them more acceptable for pontics; by correcting the plane of occlusion.

In the field of periodontics where minor tooth movement is often necessary to correct traumatic forces and improve hygiene the dentist is instructed in methods to: improve the long axis of teeth; correct occlusal disharmony; reduce an overbite; relieve trauma from lateral forces; adjust premature contact in centric; treat crowded lower anterior teeth; eliminate food impactions in posterior areas.

No book on any form of therapy is complete without clear-cut designations of conditions that are not amenable to treatment. Hirschfeld rounds out his excellent presentation by describing and illustrating those conditions that cannot be treated by minor tooth movement.

The appeal of this book is that it is *clinical* and *practical*. It tells the dentist what he should do and how he should do it to correct those conditions that are often sources of embarrassment and distress to the patient and the dentist. Few of us realize the annoyance that plagues many people because they have a space between their upper anterior teeth or crowded lower anteriors. These are only two examples of minor psychic traumas of dental origin. In any form of dental restoration minor tooth movements that are made to correct mechanical abnormalities are genuine contributions to the art of dentistry.

[1]Hirschfeld, Leonard: Minor Tooth Movement in General Practice, St. Louis, C. V. Mosby Company, 1960.



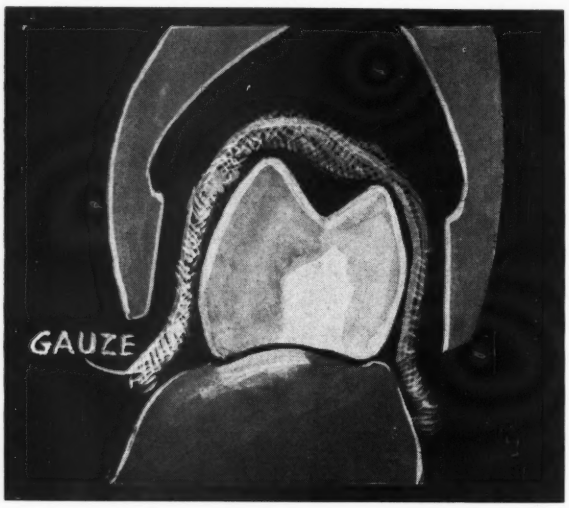
1

Clinical and Laborato

Loosening Forceps

C. H. Bartle, D.D.S., New Glarus, Wisconsin

1. To loosen the joint of a forceps place wet pumice in the joint. Open and close the forceps to secure the proper degree of looseness.

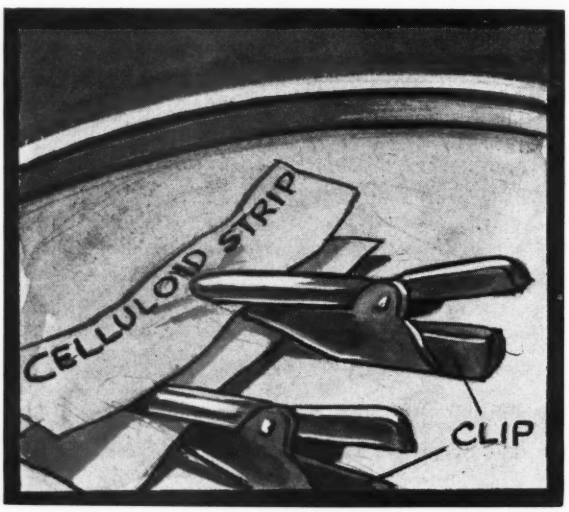


2

An Exodontic Procedure

S. M. Hutchinson, D.D.S., Brooklyn, New York

2. To remove an anesthetized tooth that is sensitive to the touch of the forceps, place a piece of gauze over the tooth and then apply the forceps. Teeth with exposed roots often present this problem.



3

The Celluloid Strip

C. P. Richard, D.D.S., Huntington Park, California

3. Celluloid strips that are used for silicate restorations are often difficult to locate on the bracket tray. A clip placed on the strip will be helpful in locating the strip.

READERS *are Urged to Collect $10.00*

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10 on publication.

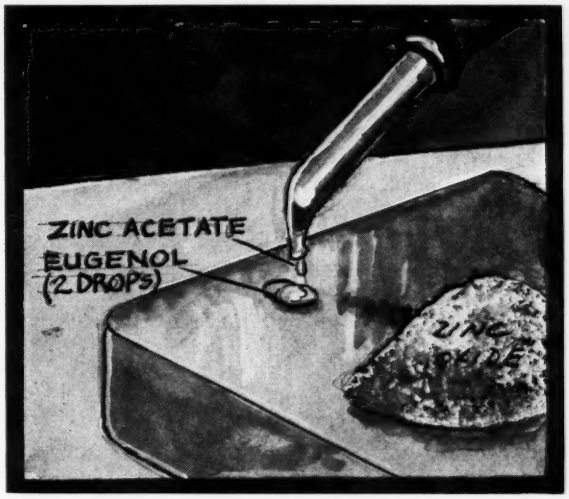
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Accelerating Set-up of Zinc Oxide

William G. Buckley, D.D.S., Racine, Wisconsin

4. Add an amount of zinc acetate the size of a pinhead to the two drops of eugenol that are used for a zinc oxide base to speed up the setting time of the mixture.

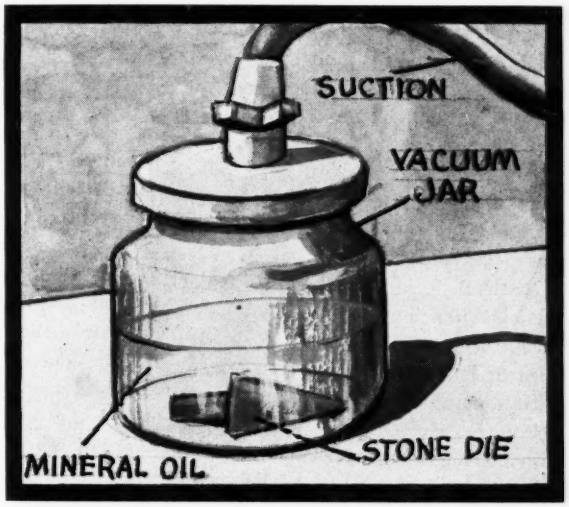


4

Preparation of Die for Waxing

L. A. Merriman, D.D.S., Marietta, Georgia

5. Wax will stick to a stone model. To impregnate the model with oil to prevent the wax from sticking place the model in a vacuum jar and withdraw the air by suction. Then place the model in oil.



5

An Emergency Operating Light

Louis M. Fleisch, D.D.S., Topeka, Kansas

6. A sportsman's flashlight lantern may be used as an emergency operating light.

6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 480 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

MEDICINE and the Biologic Sciences

Plummer-Vinson Syndrome

Frequently the Plummer-Vinson syndrome contributes much toward the failure of full dentures. This is especially true in late middle-aged and elderly women as the condition is noted more frequently in women than in men.

Chronic iron deficiency has been blamed for dysphagia and other features of the syndrome. Vitamins B and C also may be lacking. Carcinoma of the upper alimentary tract is more closely related than generally realized.

The only absolute requirement for diagnosis is dysphagia produced by valvelike strictures and web formation of the hypopharynx and upper esophagus. This change is produced by atrophy of the epithelium and underlying musculature. Other features are smooth, thin facial skin, a narrow mouth tending to fissure at the angles, a smooth tongue, brittle spoon-shaped nails, particularly on the thumb and first three fingers, current or past anemia often longstanding, and loss of all teeth, usually because of pyorrhea or looseness. About half of the patients have normal hemoglobin and many have normal serum iron levels. Previous hoarseness, dry skin, or peptic ulcer may be noted.

The lower income groups are particularly susceptible. Far more women are affected than men. The menstrual flow is often heavier and somewhat longer in women with dysphagia. Persons with dysphagia commonly have diets deficient in fresh fruits, vegetables, meats, poultry, and eggs.

Cancer in persons with the Plummer-Vinson syndrome usually affects the upper alimentary tract, especially the hypopharynx. The buccal tissues, gingiva, tongue, esophagus, lip, palate, or vocal cords may be affected.

Apparently, chronic iron deficiency is the primary cause of the condition. Other possible nutritional factors have not been identified. The most convincing evidence for iron deficiency is the fact that iron alone may partly or entirely abolish dysphagia if anatomic changes are not irreversible. Menstrual losses of iron may be important.

Dietary supplements of iron and vitamins may prevent the syndrome. This is of benefit to both the patient and the dentist to ensure greater chance of success.

Wynder, Ernest L., and Fryer, Jefrey H.: Etiologic Considerations of Plummer-Vinson Syndrome, Ann. Int. Med. **49**:1106-1128 *(December)* 1958.

Ulcers—Causes

Usually peptic ulcers are caused by hypersecretion of gastric juice. Excessive secretion is of nervous origin in patients with duodenal ulcers and humoral or hormonal origin in those with gastric lesions.

The hydrochloric acid and pepsin in gastric juice can digest and destroy all living tissue. Usually, the acid secretions are buffered and diluted by swallowed food, saliva, mucus from the pyloric antrum, and regurgitated duodenal secretions. Folds of the gastric mucosa also help to protect the stomach from peptic digestion. The protective mechanisms are inadequate when unusually large amounts of gastric juice are secreted.

Under normal conditions, gastric juices are secreted continuously, even when the stomach is empty. Fasting secretion is chiefly of nervous origin, being almost completely abolished when the vagus nerves to the stomach are cut.

The measurement of free hydrochloric acid in fasting secretions is a valuable guide to correct therapy for peptic ulcer. Patients with duodenal ulcers secrete 3 to 20 times as much hydrochloric acid in the fasting stomach as do healthy persons. If the output is large, as in most patients with duodenal ulcers, surgical intervention is advisable.

The output of acid in the nocturnal secretion falls below the level in healthy people after the vagus nerves of the stomach are completely divided. When vagotomy is combined with an effective drainage procedure so that stasis of food in the antrum of the stomach is prevented, duodenal ulcers heal and remain healed.

Stasis of food in the stomach is the most frequent cause of prolonged or excessive secretion of gastric juice of humoral origin. Contact of food with the antrum precipitates release of gastrin. The hormone passes into the circulation and stimulates the secretory activity of parietal cells in the corpus and fundus of the stomach.

In about 80 per cent of patients with gastric ulcer, stasis results from gastric atony. Fasting gastric secretion is decreased. Gasteroenterostomy, which relieves gastric stasis, exerts a healing effect. Resection of the antrum will usually bring about healing of a benign gastric ulcer that has been left *in situ* in the region of the esophagus.

In the remaining 20 per cent of patients with gastric ulcer, stasis is due to pyloric stenosis caused by preexisting duodenal ulcer. If only gastroenterostomy or low gastric resection is performed, secondary gastrojejunal ulcers often develop because of preexisting increased vagal activity.

Dragstedt, Lester R.: Cause of Peptic Ulcer, JAMA **169**:83-89 (January 3) 1959.

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Care of Multiple Injuries

After an accident injuring several parts of the body, the urgent need is to prevent death from asphyxia, shock, or hemorrhage. First aid is vital. Physicians are seldom the first attendants in first aid. The National Safety Council estimates that about 9,500,000 accidental injuries with 95,000 deaths occurred in 1957.

If the airway is blocked, anoxia will cause permanent brain injury or death in two to three minutes. Breathing may be restored by turning the patient on his side or pulling the tongue forward. External bleeding is stopped by pressure on the site rather than on pressure points. Fractured extremities should be splinted before transportation.

In appraisal of injury, the type of accident should be learned. The patient must be protected from further injury, such as hopeless damage of the spinal cord by movement of a fractured spine. The worst possible lesions should be taken for granted until disproved.

Physical examination must be gentle and shock must not be increased by undue exposure. Care of asphyxia, shock, and hemorrhage takes precedence over everything else. If cyanosis and difficult breathing are noted and the throat fills with fluid in spite of suction, tracheostomy may be done.

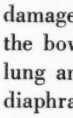
The patient not already in shock probably will be soon, and appropriate treatment should start before blood pressure falls. Except in patients with brain injuries, morphine is given to relieve pain.

Roentgen examination should not be carried further than absolutely necessary. Free air showing rupture of a hollow viscus can be safely demonstrated in upright position with a tilt table. Early films of the skull should be postponed if the subject cannot hold his head quiet, unless an open depressed fracture or a break that might damage the middle meningeal artery is suspected. Radiograms of the chest offer little in early care that cannot be learned equally well by physical examination.

Hemorrhage must be stopped and open chest wounds closed immediately. Evidence of intraabdominal perforation demands operation as soon as the general condition permits. Some hospitals admit any unconscious person to the neurosurgical service, and some neurosurgeons advise against any operation in other fields until consciousness returns. Such rules are dangerous with multiple injury, for vital abdominal surgery may be omitted.

When cardiorespiratory function returns, definitive care is first given to damaged hollow viscera, including the bowel, bladder, and occasionally lung and heart. The liver, spleen, or diaphragm may require treatment at the same time. Open injuries of muscle and bone are cared for next.

Kennedy, Robert H.: The Appraisal and Management of Patients with Multiple Injuries, Surg. Clin. North America **38**:1661-1673 *(December)* 1958.



Gouty Arthritis

Hyperuricemia is commonly regarded as a sign of gouty arthritis. It is also noted in patients with kidney disease, polycythemia, or neoplastic disease of the bone marrow. A serum uric acid value of more than 6 milligrams per 100 cubic centimeters may occur at random in the general population.

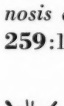
Gout is characterized by attacks of acute arthritis, with complete remission of all joint and bone symptoms during the early phase. The condition occurs chiefly in males, usually starting sometime between 30 and 50 years of age. The disease is frequently familial. If no uricosuric medication is given, excess uric acid in the blood will occur at some time during the course of the disease.

Acute gouty attacks are seen after operative procedures, trauma, strenuous exercise, discontinuance of steroid therapy, and administration of drugs such as liver, mercury, and ergot. Subcutaneous or bone tophi are pathognomic. Chronic renal disease and the passing of a urate stone make the diagnosis probable. Relief of joint symptoms from colchicine therapy confirms the diagnosis.

Gout is often confused with rheumatoid arthritis. Unusual features include onset during childhood, gouty nephritis preceding arthritis, coexistence of gout and rheumatoid arthritis, and roentgen signs of the disease three months after the onset of symptoms. Although the course is relatively benign, the effects may be devastating. Irregular gout has been described as consisting of nonspecific, vague ailments in gouty patients or in nongouty members of gouty families.

Biopsy should be considered in the event of difficulty in differentiating a rheumatoid nodule from a gouty tophus, although such a procedure is not considered generally practical. Needle biopsy in the suprapatellar pouch of the knee may have limited application. Continued observation is required for diagnosis of most atypical cases.

Goldthwait, Joel C.; Butler, Carrol F.; and Stillman, J. Sidney: The Diagnosis of Gout, New England J. Med. **259**:1095-1099 (*October* 16) 1958.



Brucellosis

Brucellosis or undulent fever often causes many victims to experience nonspecific symptoms for a long time after an acute attack subsides. The persistent illness is similar to neurosis because demonstrable physical abnormalities are not found. Emotional disturbances, which precede or arise independently of the Brucellosis infection are probably the main cause of prolonged illness. Somatic symptoms support self-esteem by affording an alternative to recognition of psychologic difficulty.

The incubation period is generally two to eight weeks. Occasionally it is sixteen to eighteen weeks. The onset may be abrupt or malaise may progress insidiously for months. Most patients seek medical care within a week

or two after onset of symptoms.

The outstanding manifestations are fever, headache, fatigue, and muscular pain. Fairly common are chill, backache, arthralgia, and nausea with or without vomiting. The temperature varies from subnormal to 105° Fahrenheit or above. Fever is often remittent, falling somewhat in the morning and rising in the late afternoon. If fever continues a week or more, undulating patterns may appear, usually in patients with bacteremia.

The liver or spleen is sometimes enlarged and perhaps tender. Early in the course of the disease, leukocytosis may be observed, but elevated counts usually decline in a few days. Lymphocytosis is common later. The red cell sedimentation rate increases in most cases. Slight anemia may appear.

Acute brucellosis is proved by isolation of Brucella from the blood or marrow aspirate during the attack, by rise of serum agglutinins or both. At least 1 blood culture is positive in about 3 or 4 cases. Skin tests are unreliable.

Several types of chemotherapy have been tried. No drug or combination of drugs appears to influence the duration or course of fever, recurrence of acute illness, or development of chronic symptoms. The only apparent benefit is more rapid disappearance of bacteremia when streptomycin and a tetracycline are combined.

Fever usually persists slightly more than three days and may lessen gradually or abruptly. A few differences are detected with various types of organisms. About one-third of cases have one or more recurrent attacks always with increased agglutinin titer and often with bacteremia. Manifestations are about the same as in the original episode, though frequently less severe. Intervals between seeming recovery and recurrence may vary from two weeks to eleven months. Many patients are symptom-free between acute illnesses, but fatigue and malaise may persist.

Trever, Robert W.; Cluff, Leighton, E.; Peller, Richard N.; and Bennett, Ivan L.: Brucellosis, Arch. Int. Med. **103**:414 (*March*) 1959.

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 472 *and* 473)

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Contra-Angles

Portrait of a Dental Student

WHEN 5000 applicants for admission to dental schools express themselves on their reasons, motives, resources for studying dentistry a wealth of information is revealed. Such a study is reported by William R. Mann, D.D.S., and Grace Parkin, "The Dental School Applicant."

The portrait of an applicant to dental school looks like this:

- He is a male Caucasian
- He has one or two brothers or sisters
- He is the eldest child
- He is unmarried
- His parents are well educated
- His father is the owner or the manager of a small business
- His family income is between $4000 and $16,000 a year
- His home community has a population of 5000 to 20,000 persons
- He will have to work summers
- He has had no military service
- He likes and participates in sports
- His high school scholastic record in science and biology is above average
- He was in the upper third of his high school graduating class
- He was in his third year of college when he took the aptitude test for dental school
- His college grades were between B− and C+
- He wishes to enter dentistry because of a desire to work for and with people
- His family dentist influenced his decision
- He prefers dentistry to any other vocation with medicine as a second choice
- He believes that only the physician and the clergy have more prestige

• He believes that both skillful fingers and brain power are important to success

• He believes that the quality of dental education is about the same among dental schools

• He prefers the specialties of orthodontics or oral surgery

• He prefers to practice in a community about the same size as his home town

• He prefers private practice

• He expects to earn about $10,000 a year after 5 years and $15,000 after 10 years

The young man shown in this portrait is from a family of well educated parents who have an annual income higher than the average. The family is usually of non-professional background. Only 7.5 per cent of the fathers are dentists and 4.1 per cent are physicians. The applicant is motivated by a desire to obtain higher prestige and status: to ascend the social and economic scale.

The commendable objectives of the Fund for Dental Education are expressed in this report by Mann and Parkins:

"If one expects to recruit more and better applicants for dental schools, one must recognize that schools should be drawing from a group larger than that composed of those who can afford to pay for this type of education. Some way must be found to attract more good students to dental education and to assist them in financing their education when they have no other means at their disposal . . ."

". . . in order to have maximum effectiveness, any program of recruitment must be directed toward young people early in their school life."

Those of us who entered dental college in the World War 1—Depression Era are impressed with the improved caliber of dental school applicants.

We were from families with less education and lower comparative incomes. We were not required to take aptitude tests or submit to college entrance examinations. Most of us were compelled to work to help pay for our education. There were no student loan funds available for our use.

Dental schools were neither heavily endowed nor well supplied with tax funds. Affluent alumni were unknown. Tuition fees and the income from patients in the clinic were the chief sources of revenue. Dental teachers were conspicuously underpaid. (As an example, I received $2000 a year for a full-time teaching position—and was glad to get it!)

Despite the lofts and basements that housed some of our dental schools, despite the disorganized and haphazard teaching, the dental schools before the World War 1—Depression Era trained some real "giants in the earth." Shortly before I entered the profession and during my younger years in the profession these stalwarts included: G. V. Black, C. N. Johnson, Edwin Darby, Truman Brophy, Frederick B. Moorehead, Donald M. Gallie, Walter Dittmar, Edward Kirk. These are a few; there were others. I can think of not one present-day dentist of the stature, force of personality, and enterprise of these men. Of these gallant and intrepid pioneers only one is still alive, Frederick B. Noyes.

I mention these vigorous leaders with some nostalgia surely, but more particularly to wonder aloud regarding our present form of dental education. Why is it that we are not producing "giants" any longer? The same blight has stricken medicine and the law. Where are the Oslers, the Mayos, the Listers, the Murphys, the Harveys? Or the Blackstones, the Oliver Wendell Holmes, the John Marshalls? Or where, for that matter, are the Washingtons, Jeffersons, the Hamiltons, the Franklins, the Lincolns?

It is not fair to say that our present type of dental education produces mediocrity or conformity. I am sure that the present-day crop of dental graduates have received a better quality of *formal* training than the World War 1—Depression graduates. Something, however, seems to be lacking. The spirit and audacity does not seem to be there now. The fierce individualism, the outspoken courage of the past leaders seems to be lacking. The zest for independence has been lost. The quest for security has emerged.

Among the dental school graduates since World War II the expression and the underlying sentiment "I'm not going to stick my neck out" is common. The tendency to be an "Organization Man" and be regimented by dental organizations is common. The fear to be "different," the badge of conformity, is worn by too many of our young men in dentistry.

These traits of a common stamp, a regulated image, may not be products of their education but of the times in which they live.

—E.J.R.

MELKERSSON'S SYNDROME

(*Continued from page* 467)

indication of a hereditary predisposition to the development of facial paralysis (and facial edema), and it was suggested that the appearance of the tongue be noted in all patients with Bell's palsy.

Pathology—The microscopic findings in the region of chronic edema may be nonspecific, or the histology picture may be identical with that of Miescher's cheilitis granulomatosa. Usually a round cell infiltrate is reported, together with findings resembling specific granulomas, including sarcoid and tuberculosis. None of the findings has been considered diagnostic.

Cheilitis Granulomatosa: First described only recently, cheilitis is a peculiar disease of the lips with a characteristic histologic appearance. Although no mention was made of the occurrence of facial paralysis or of lingual abnormalities in the original description of this condition, a case of chronic lip edema was reported showing the typical microscopic picture of cheilitis granulomatosa associated with lingua plicata.

Possible Form of Melkersson's Syndrome: Cheilitis granulomatosa, not related to dental sepsis or other apparent cause, may well be a *forme fruste* of Melkersson's syndrome.

Reported Treatment—the forms of therapy employed in the Melkersson syndrome have been varied and notably unsuccessful. Boiling water injected into the lips of the patients, and in some cases added subsequent surgical procedure, obtained inconsistent results. Local excision alone has been attempted. The following measures have been used: (1) roentgen irradiation, (2) antituberculosis drugs, (3) vitamin D_2, (4) quinacrine (atabrine), (5) penicillin, (6) ultrasound, (7) local application of cold packs, and (8) steroids, including ACTH. The number of patients treated by any one means is not yet large enough to be significant.

Etiology—Theories advanced to explain the origin of Melkersson's syndrome have implicated (1) allergic reaction, (2) syphilis, (3) lymphogranuloma inguinale, (4) basal arachnoiditis, (5) benign lymphogranulomatosis, and (6) bacterial infection of the teeth and throat. None has explained satisfactorily all the peculiar manifestations of the disease, so the etiology remains obscure. Recently, however, additional neurologic dysfunctions have been reported in patients who exhibit Melkersson's syndrome.

Associated Conditions Reported—

(*Continued on page* 485)

(*Continued from page* 482)

(1) Melkersson's syndrome occurring in a patient with congenital megacolon, a disease known to result from absence of autonomic ganglion cells in the lower bowel has been reported. (2) A case of Melkersson's syndrome in association with deafness and otosclerosis was noted. It was thought that the latter might have resulted from a "gradually increasing defect in the vasomotor mechanism which governs the nutrition of the ear." (3) In a neurologic and psychologic evaluation of 18 patients with Melkersson's syndrome, it appeared that various stress factors may precipitate symptoms in persons with "an unstable vegetative (autonomic) nervous system." A decade ago it was postulated that the paralysis of the facial nerve is caused by ischemia of the nerve, with the impetus to the arteriolar constriction derived from an "inherited imbalance" of the autonomic nervous system. Whether a similar imbalance exists in patients with Melkersson's syndrome remains to be proved.

Summary

A case of Melkersson's syndrome is reported. In this entity the unusual triad of symptoms—recurrent facial

(*Continued on page* 486)

Subacute Bacterial Endocarditis in Old Persons

W. J. GLECKLER, M.D.,
San Mateo, California

Comment

While formerly the opinion was widely held that subacute bacterial endocarditis was strictly a disease of the young, in recent years, from 10 to 50 per cent of the cases reported in the literature in several series have been in patients over 50 years of age. This incidence is likely to increase as the proportion of the population over 50 years of age increases. The success of modern antibacterial therapy is a practical reason for attempting to improve the frequency of correct diagnosis of the disease.

In a series of cases observed, the only constantly present clinical feature was a heart murmer. Also, when it was measured, the serum protein pattern always showed a reversal of the albumin-globulin ratio. There was no other single clinical sign or symptom in all of these patients. Therefore, a heart murmer should be a reminder of the possibility of the disease in any elderly patient, even if the remainder of the clinical picture seems to suggest a psychosis, renal insufficiency, gastrointestinal malignancy, or other unrelated illnesses.

From *Geriatrics* **15**:157 (*March*) 1960.

MELKERSSON'S SYNDROME

(*Continued from page* 485)

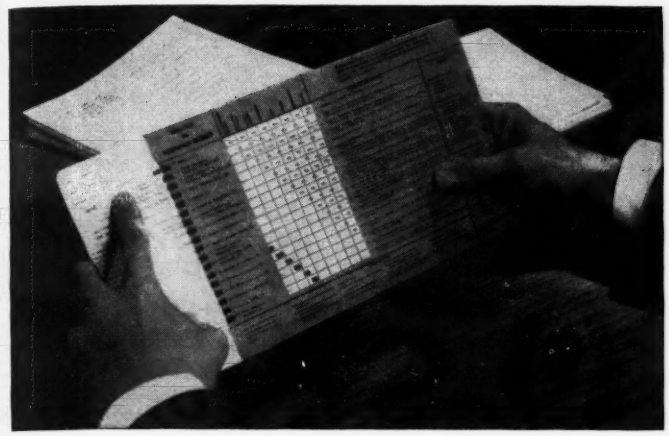
paralysis, facial edema, and lingua plicata—often is varied. Possibly the syndrome is caused by an underlying defect in the autonomic nervous system.

Adapted from *Proceedings of the Staff Meetings of the Mayo Clinic* **34**: 365 (July 22) 1959.

Effect of Supplemental Vitamin Therapy on the Limitation of Incidence of Cleft Lip and Cleft Palate

To mothers who had previously given birth to children with a harelip, a multivitamin capsule was given daily by mouth and 1 cubic centimeter of vitamin complex was given intramuscularly every other day for the first trimester. Of 87 mothers in the series, 48 did not receive vitamin therapy. There were 78 pregnancies in this group and 5 of the offspring had congenital anomalies (6.4 per cent). Of 39 mothers who received vitamin therapy, 59 children were born in subsequent pregnancies. None of these children had a cleft lip and/or cleft palate.

Surgery, Gynecology & Obstetrics **109**:222 (September) 1959.



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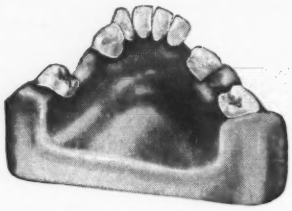
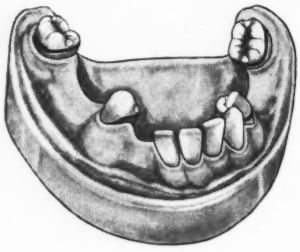
Design for a difficult case

This patient had almost completely neglected dentistry until well along in his twenties. Extraction of carious teeth had been made from time to time with no attempt at restoration, and the result was that remaining teeth were left to drift unchecked.

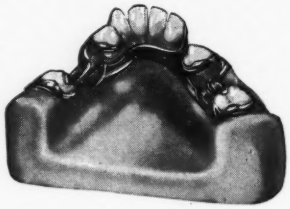
One malpositioned tooth, the right second bicuspid, tilted lingually about 45°, at first appeared to block any attempt to seat a partial denture.



However, after surveying and analyzing this case on the Ney Surveyor Parallelometer, it was found that, despite the badly tilted bicuspid, a gold partial could be designed to provide satisfactorily the necessary features of bracing, retention and support.

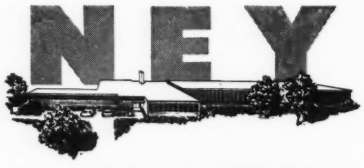


The strut which runs from the gold framework to the right lateral defines an unusual space between the lateral and the supplied tooth. Surveyor analysis definitely pointed out that the case could be seated only if it were deliberately designed to create such a space. This was, in fact, the key to the whole problem.



The final design included ring clasps on the two molars and back action clasps on both bicuspids, with buccal truss arms instead of the more usual lingual truss arms. The extremely difficult undercut condition called for a material with flexibility as well as strength, and Ney-Oro G-3 Casting Gold was a wise and successful choice.

The case has given comfortable, efficient service for many years now, and eight strong natural teeth were saved from premature loss to the great satisfaction of both dentist and patient. *The J. M. Ney Company, Hartford 1, Connecticut.*



HARTFORD 1, CONNECTICUT

(Continued from page 457)

thus a leverage, and a rotation of th mandible with lateral displacement o condyles. These condylar positions ar near to, if not actually, true disloca tions.

Conclusion

Unilateral forward dislocation wit occlusion of the teeth becomes the ab normal acutely traumatic achievemen of a cultural inhibition of a powerfu instinct.

Adapted from *Lancet* No. 7, 140:3 (July 2) 1960.

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